THE FAR EASTERN REVIEW

Complimentary

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HIS IMPERIAL HIGHNESS, THE PRINCE OF CH'ING
PREMIER OF CHINA

CHINA'S NEW CABINET—THE IMPERIAL KIRIN-CHANGCHUN RAILWAY—THE IMPERIAL CANTON-KOWLOON RAILWAY
THE FORMOSAN SUGAR INDUSTRY, ETC.

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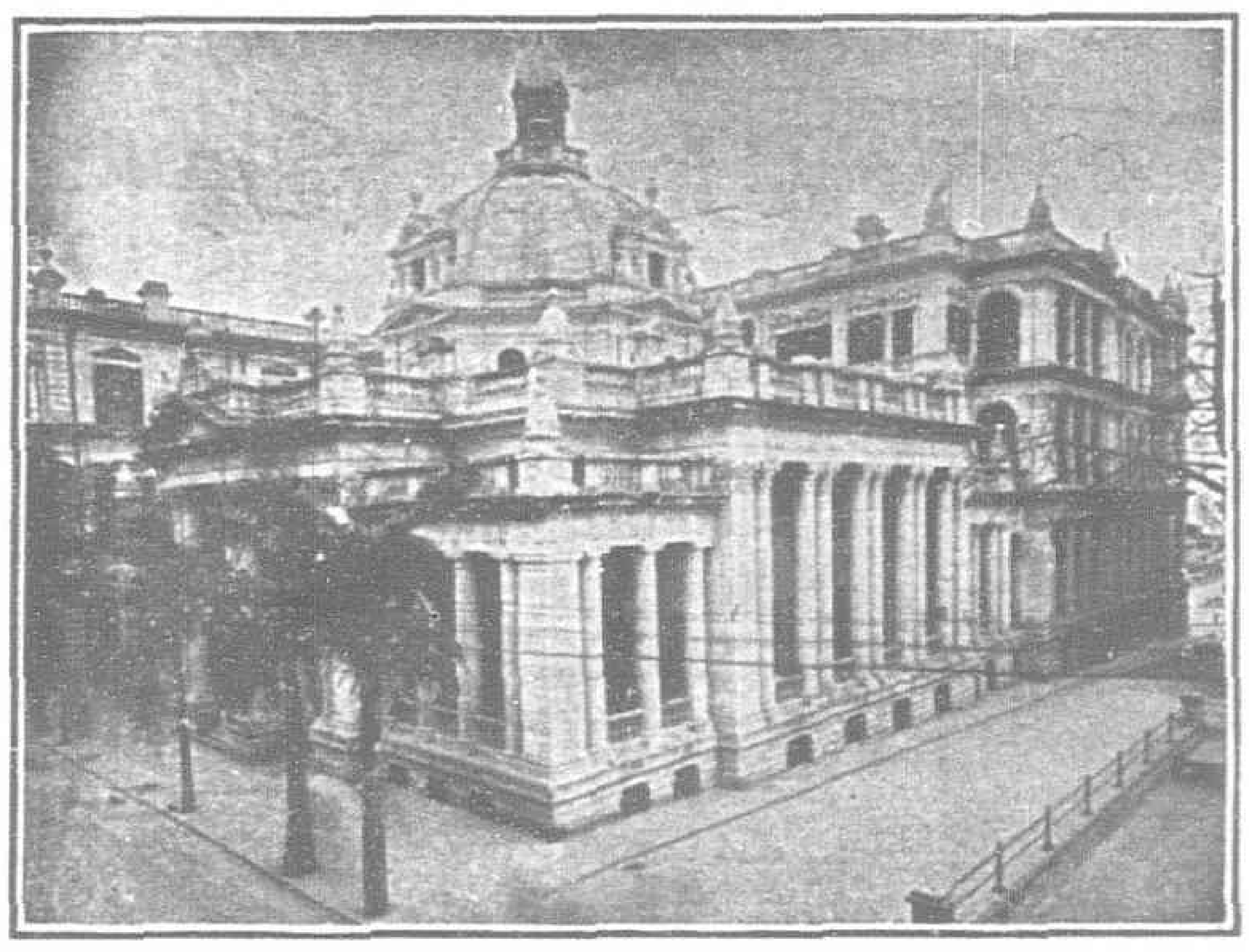

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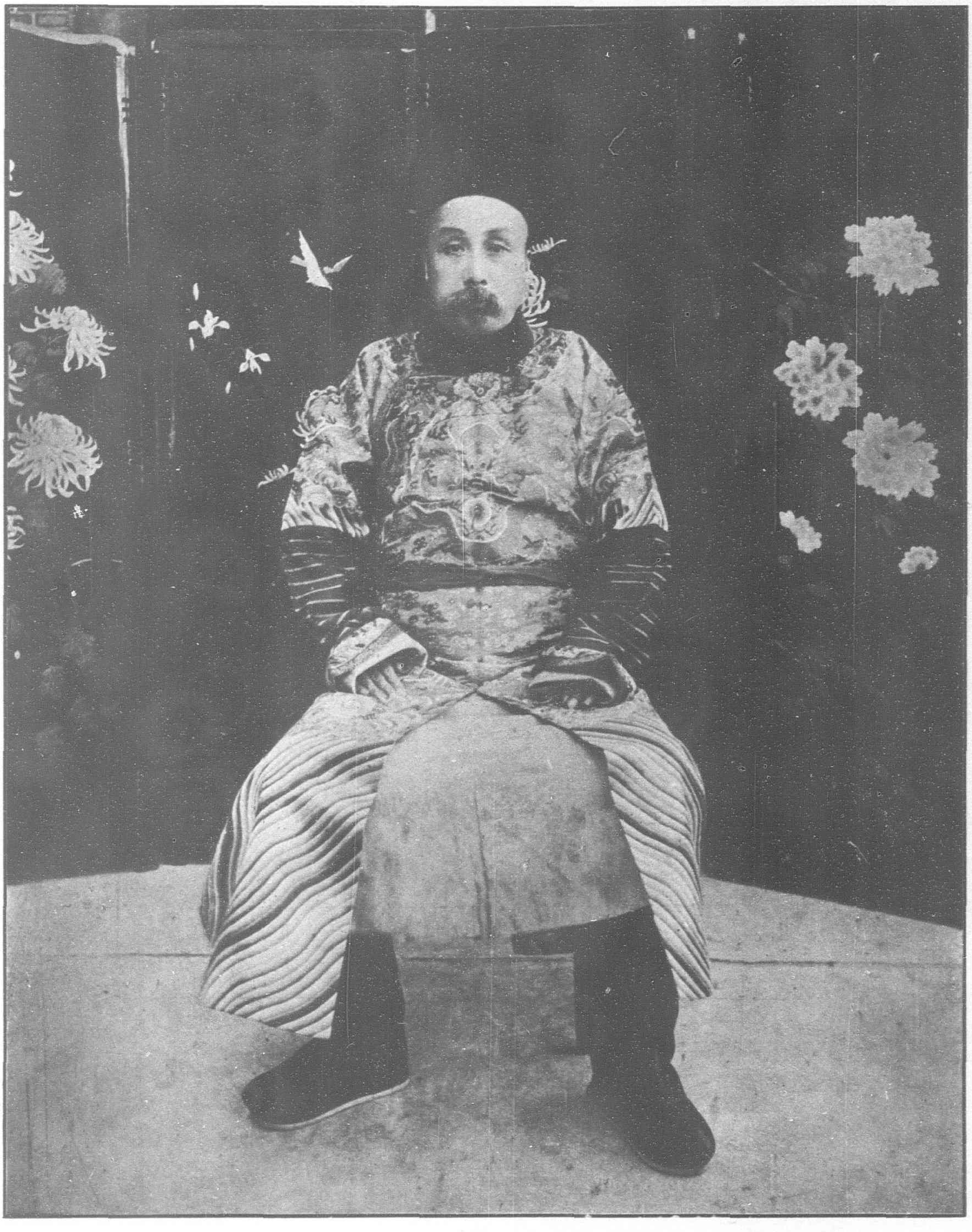
Special Supplement to
THE FAR EASTERN REVIEW
May, 1911

CHINA'S NEW CABINET

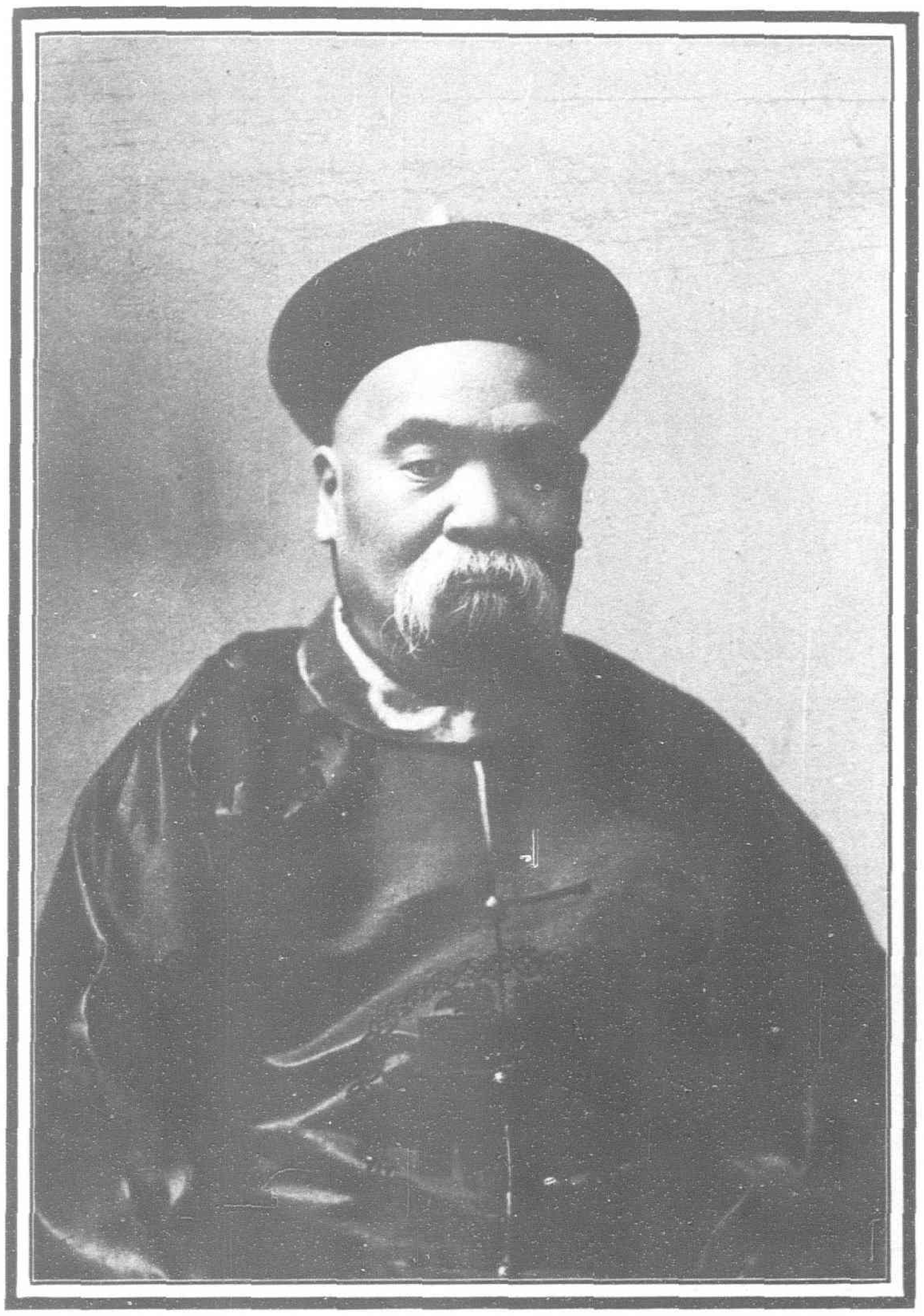


His Excellency HSU SHIH-CHANG

FIRST VICE-PRESIDENT OF THE CABINET

His Excellency, LIANG TUNG-YEN

Minister of Foreign Affairs



H. E. TSOU CHIA-LAI

Acting Minister of Foreign Affairs pending return of H. E. Liang Tunyen from America

Admiral T'ANG HSUEH-HENG

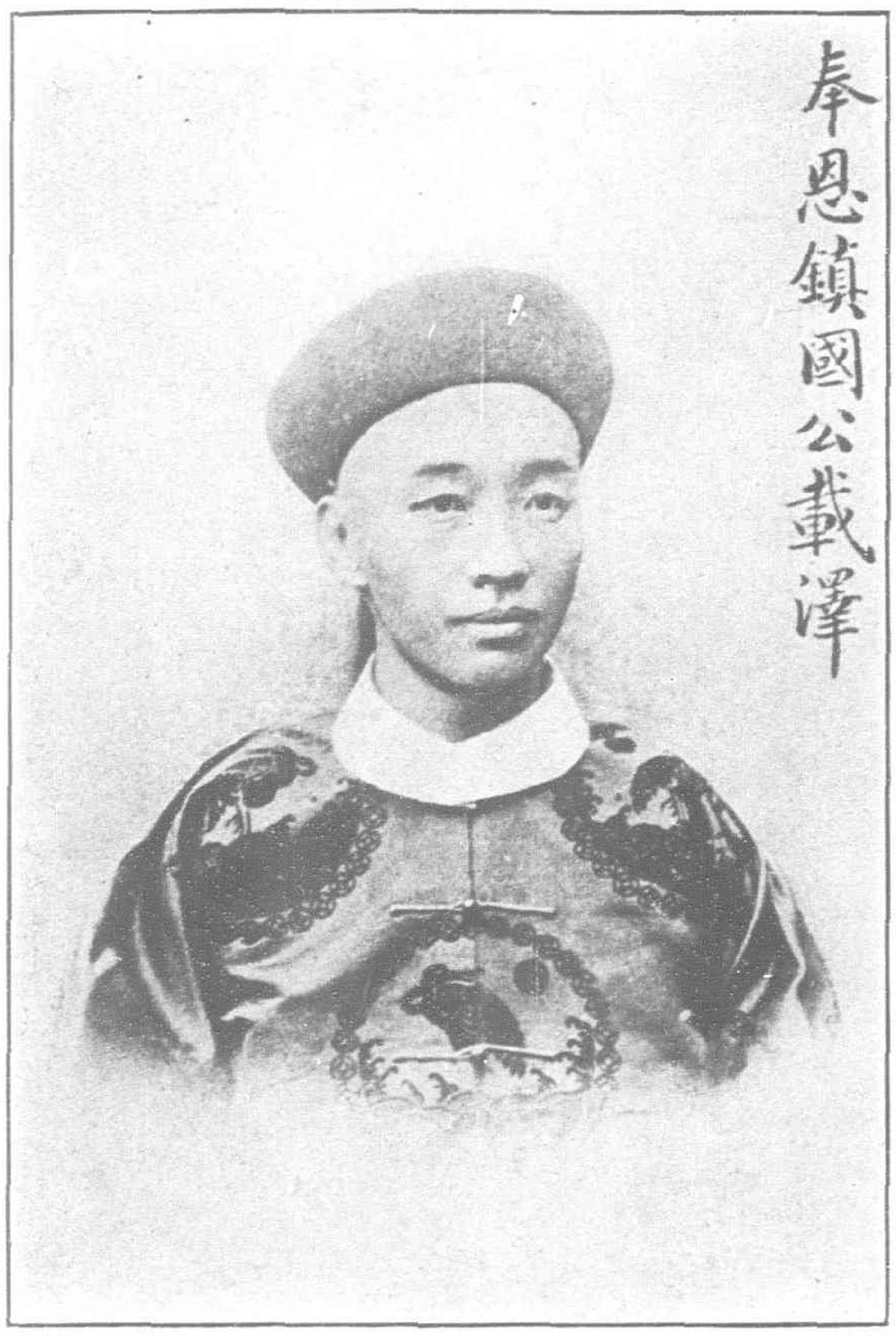
Vice Minister of the Navy

H. E. LU JUNG-HSIANG

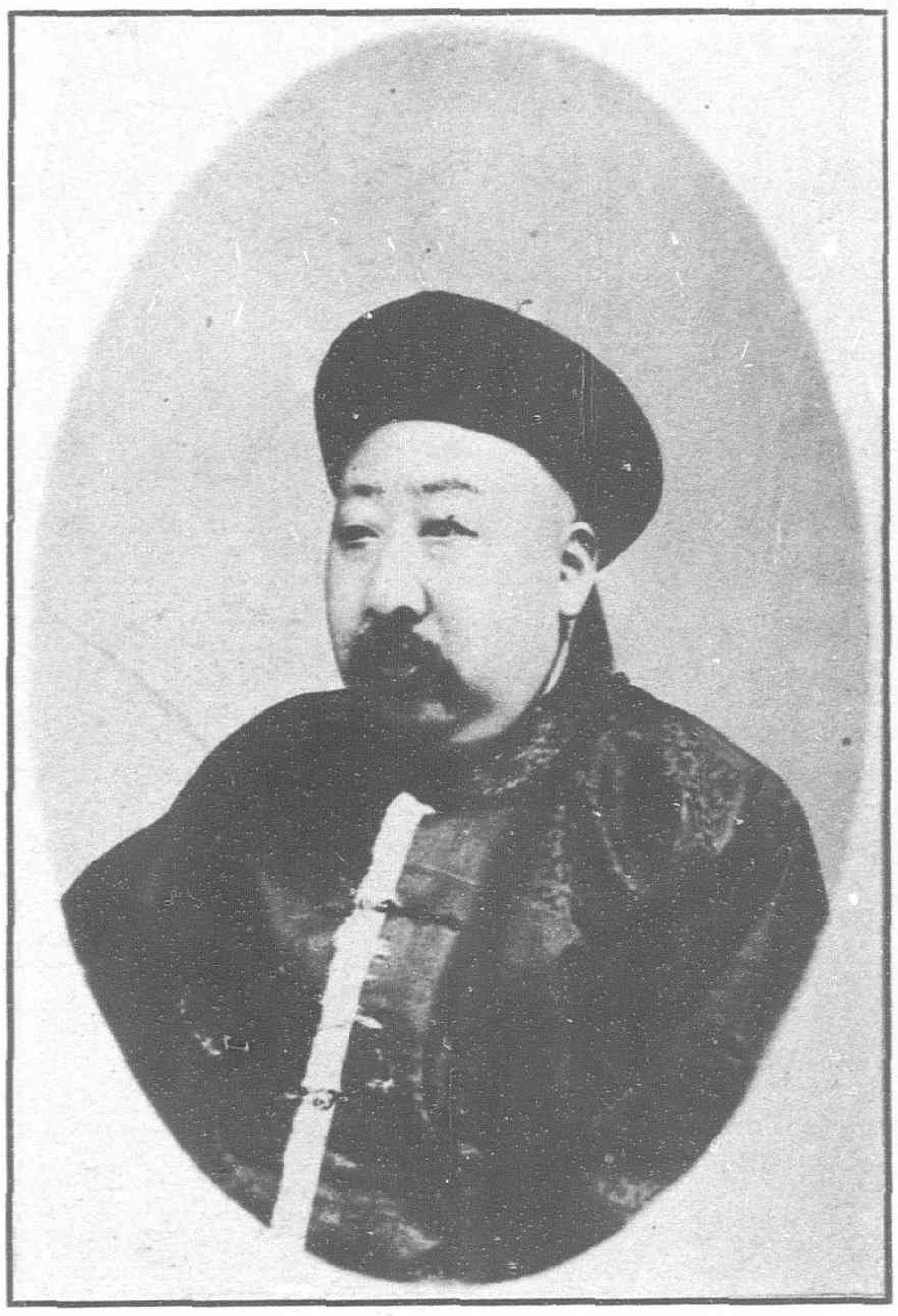
President of the Privy Council

H. E. CHAO EHR-HSUN

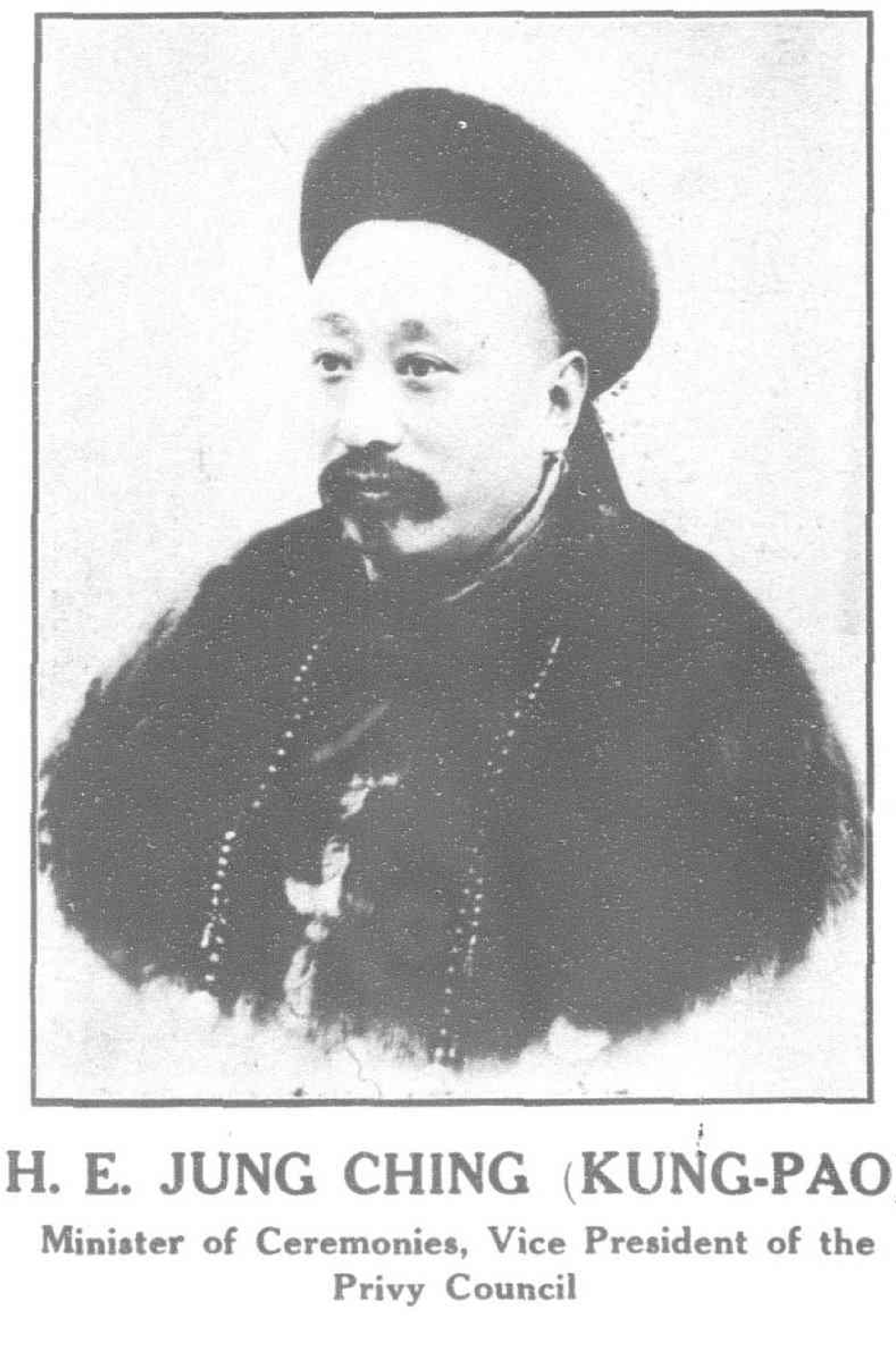
Promoted from the Viceroyalty of Szechuan to that of Manchuria with Combined Powers of Imperial High Commissioner and Tartar General



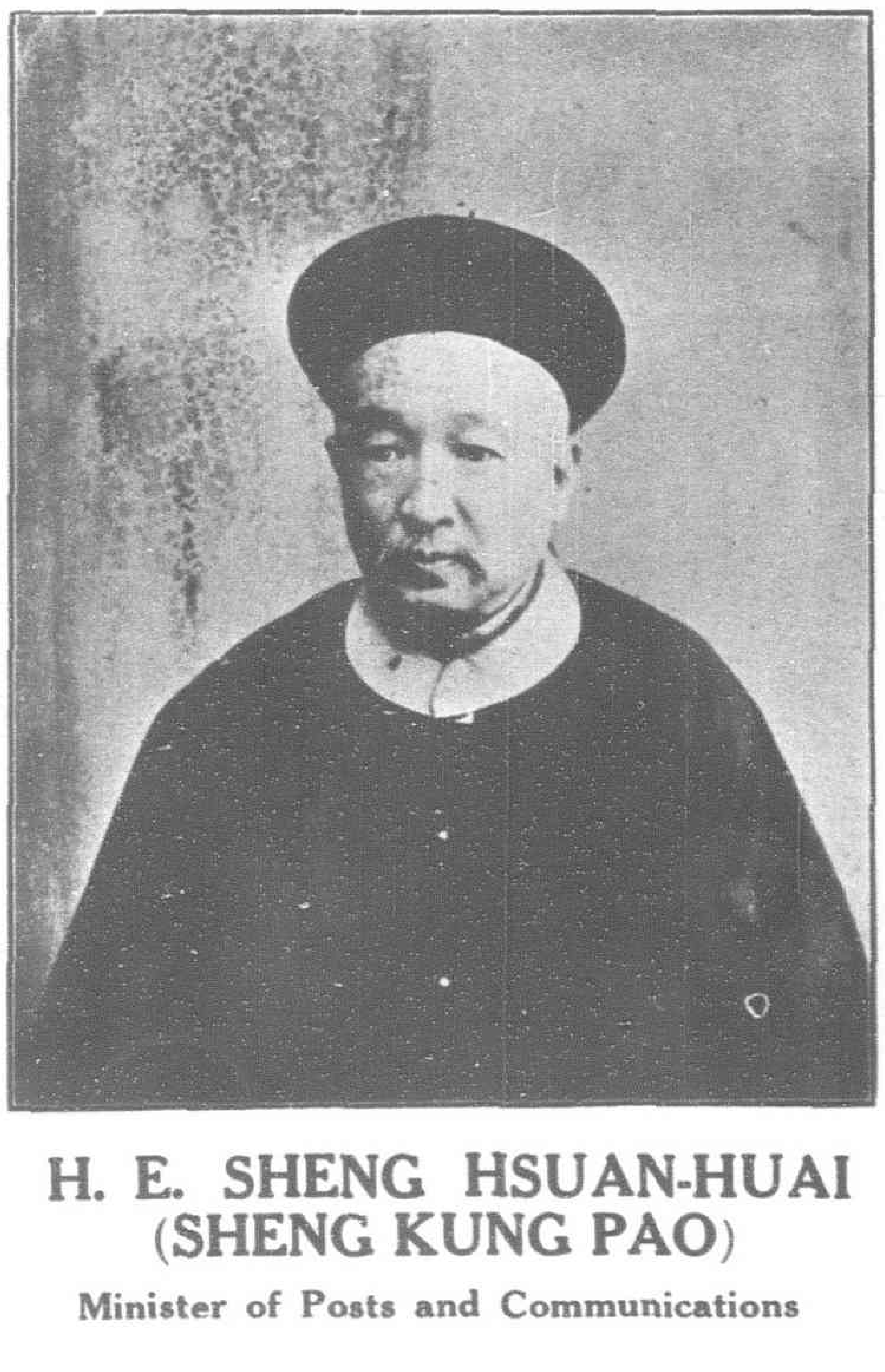
H. I. H. DUKE TSAI-TSE
Minister of Finance



H. E. NA TUNG
Second Vice President of the Cabinet



H. E. JUNG CHING (KUNG-PAO)
Minister of Ceremonies, Vice President of the Privy Council



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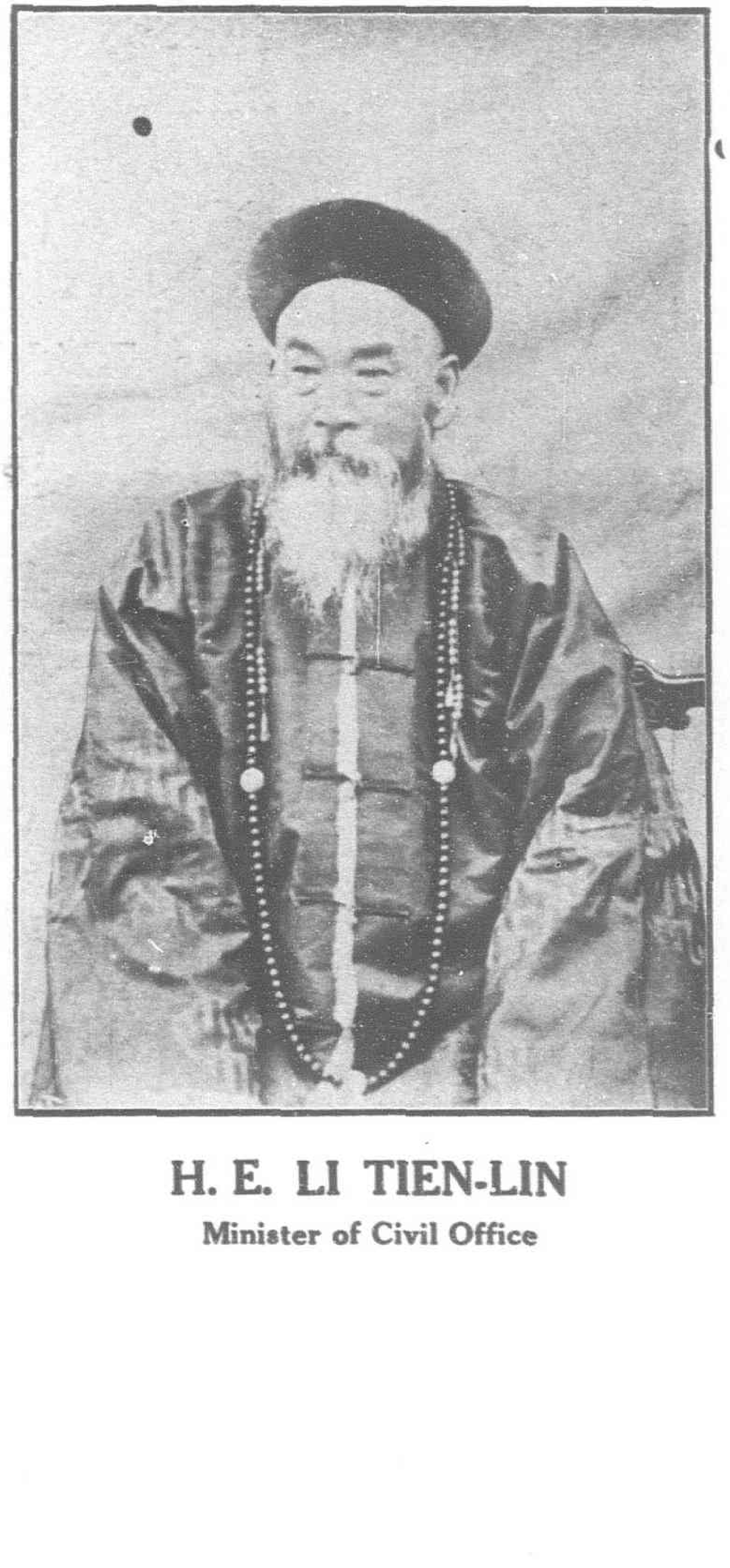
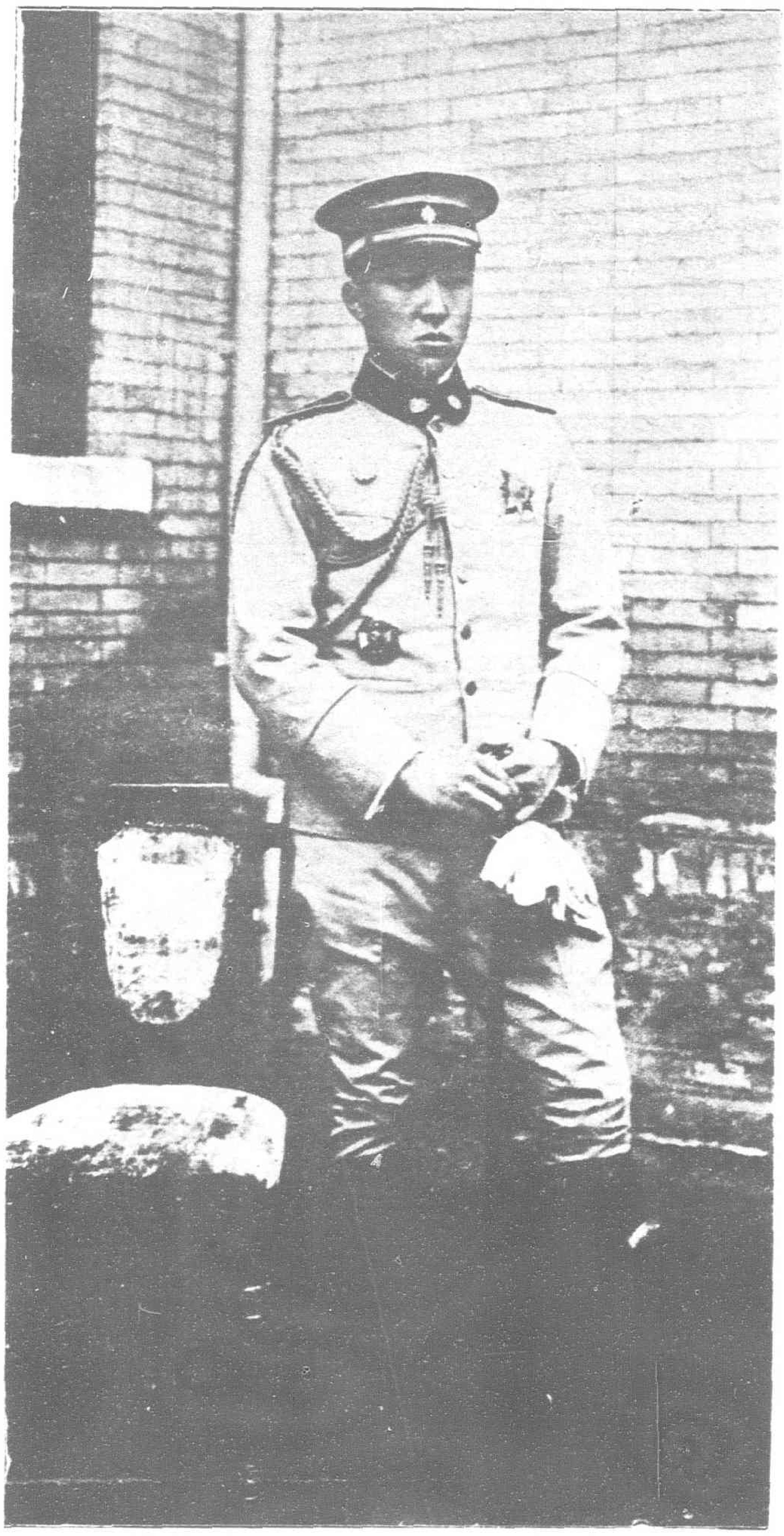
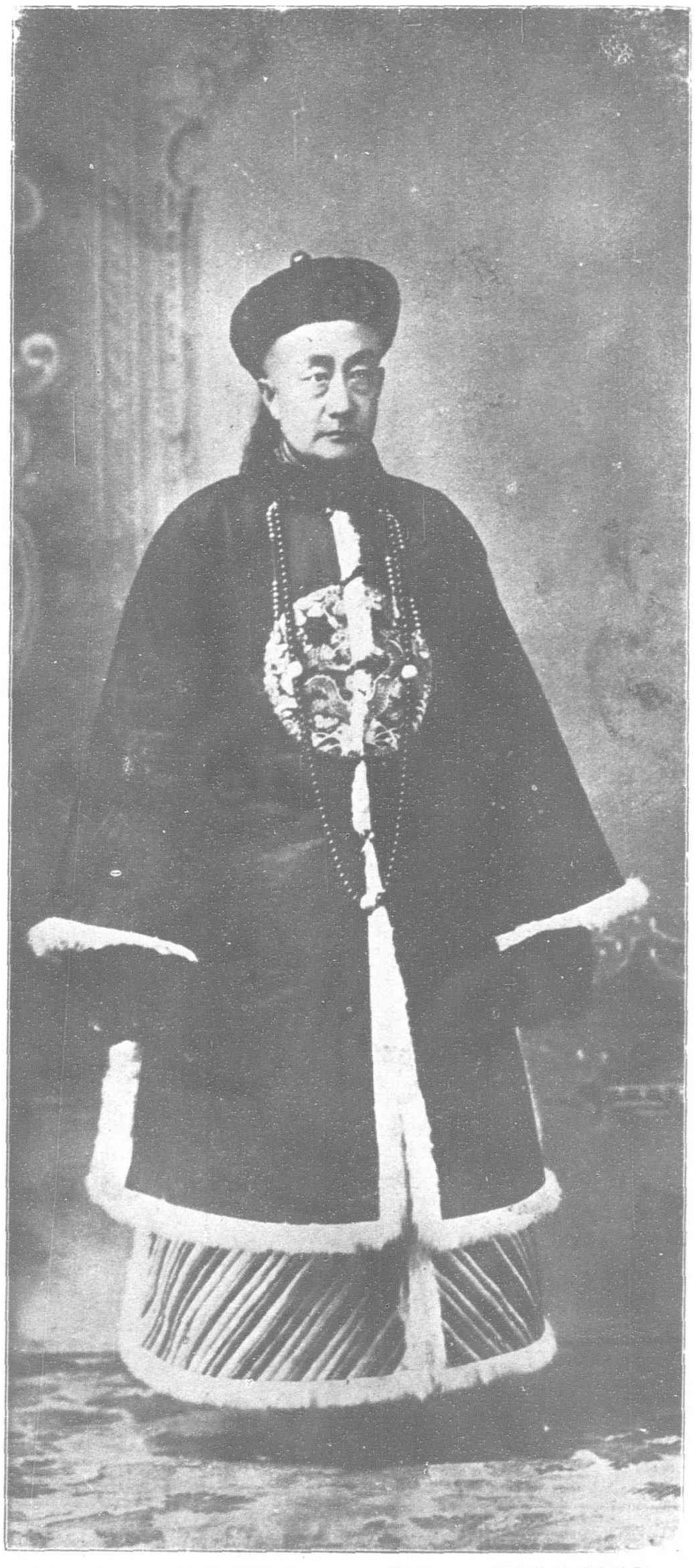
Minister of Posts and Communications



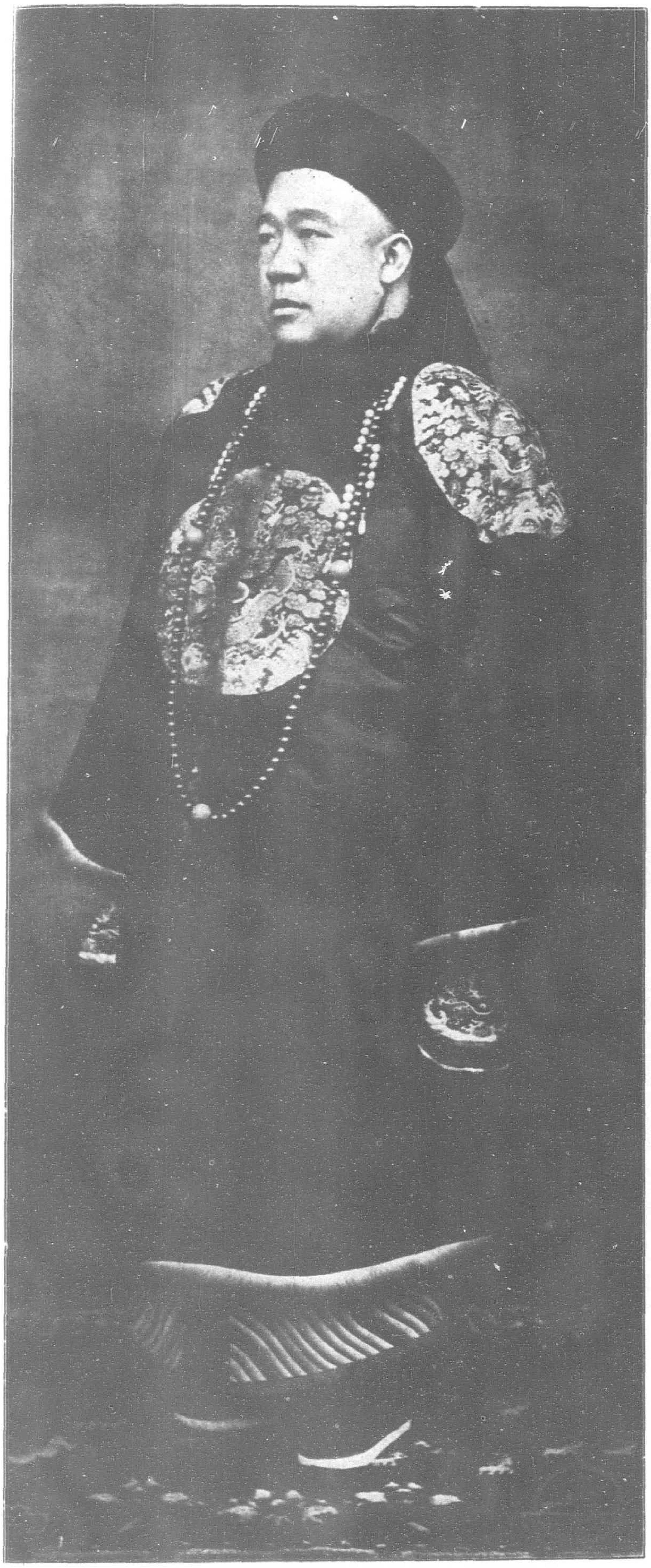
H. E. LI TIEN-LIN
Minister of Civil Office



H. I. H. Prince **TSAI TAO**
Joint Minister of the Military Council

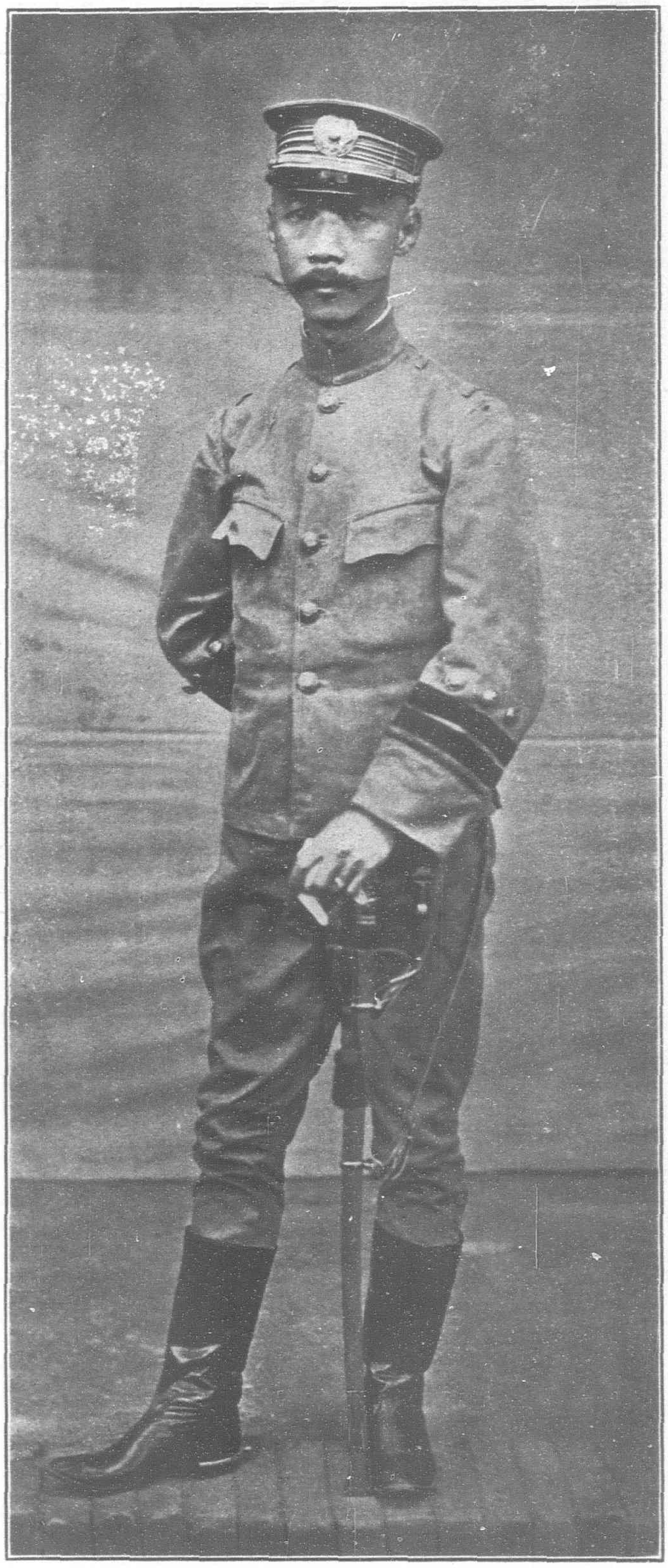


His Imperial Highness, Prince **YU-LANG**
Joint Minister of the Military Council



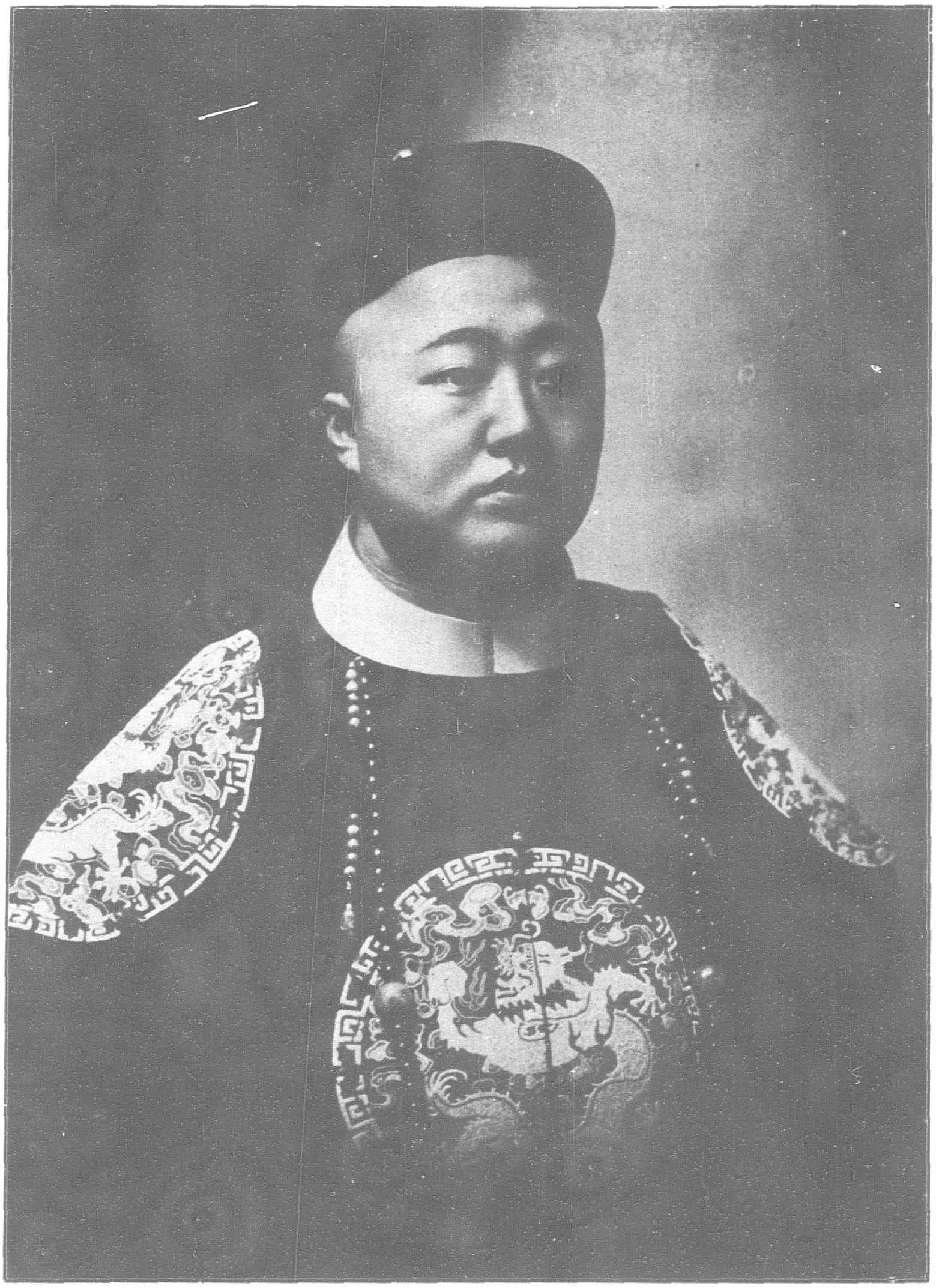
His Highness, SHANG-CH'I; Prince SU

Minister of the Interior



His Excellency General YIN-CHANG

Minister of War



His Imperial Highness, Prince TSAI HSUN

Minister of the Navy, Brother of the Late Emperor KUANG HSU and of Prince C'HUN, The Regent

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THE FAR EASTERN REVIEW
COMMERCE • ENGINEERING • FINANCE

VOL. IX. MANILA, P. I., SHANGHAI, AND YOKOHAMA, MAY, 1911 No. 12.

CHINA'S CABINET

THE IMPERIAL FAMILY

The Emperor of China, and his father, the Regent.

The Emperor and his Father and Mother, the Prince and Princess of C'hun.

From Chinese Paintings

News from Peking states that the organization of the new Cabinet and Advisory Board was formally passed by the Government Council on April 27th, and later made public officially on May 8th. Many schemes had been proposed and rejected, but the old situation apparently remains unchanged, for notwithstanding all the shuffles and revisions, the Grand Council idea is still preserved, and instead of a real Cabinet responsible to the National Assembly, the new body will for all purposes be the same as the old Council, responsible to the Throne for its actions, and presided over by the same old office holder and leader, Prince Ching. Until such time as the Empire has an established Parliament with full powers over legislation, it is natural some one leader must dominate the affairs of the country, and so long as the prime occupation of the Grand Council or Cabinet consists in shuffling officials around from one post to the other, and collecting the proceeds of the sales of office, some one strong member of the Imperial Clan must hold the reins to insure the full share of the spoils for the Imperial Coffers. As there are only two or three members of the Imperial Family whose age and experience in public affairs qualifies them for this most important post, it is again natural that one of them should continue to direct the politics and government of the Empire. So the list of eligible princes, qualified to head a responsible Cabinet, narrowed down to Prince Ching, Duke Tsai-Tse and Prince Yu Lang.

There are other princes of the Pu generation, such as Prince Kung and Pu-lun who, while capable and intelligent, lack the age and experience to cope with the astute old officials who have climbed step by step the ladder of Chinese official life. Duke Tsai Tse, the Minister of France, loomed large on the horizon as a candidate for the mantle of Prince Ching, and the post of Premier. A strong party had gathered around this capable and efficient official, and his chances of being called to preside over the cabinet seemed favorable. Prince Yu Lang, one of the eligibles, was finally offered the post of Vice President of the Cabinet, which he refused, preferring to devote his whole attention to the Army, and the selection narrowed down to Prince Ching, and Duke Tsai Tse. The former, fearing that the responsibility would be too great, followed the customary tactics of all Chinese officials when they feel certain of a high appointment, and begged to be excused and permitted to retire. After a decent interval of time, certain of his declining, the formality of tendering the honor to Duke Tsai Tse was duly performed. The Regent then sent the colleagues of Prince Ching to call at his residence and announce the Throne's decision that if he again refused to accept this office the Cabinet system would never be promulgated. And to save the country, the Prince of Ching consented to reconsider the matter and finally accepted the post of Premier of the new Cabinet.

The main idea prevailing throughout the entire scheme seems to have been guided by the desires of the Grand Council to retain its power and prerogatives. The former Grand Council consisted of Prince Ching, Prince Yu Lang, Hsu Shih Chang and Natung, and the new cabinet scheme provides for a President and two Vice Presidents, and the Ministers of the eleven Boards. Prince

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MANILA, SHANGHAI, AND YOKOHAMA, MAY, 1911

CONTENTS

PAGE
China's Cabinet.................................... 453
The Four Nation Loan 457
China's Railway Tangle 461
Foreign Advisers to China.......................... 462
American Financial advisers to Persia.............. 464
U. S. Commercial Agent to Orient................... 465
Yellow Journalism a Menace 465
The Kirin Changchow Railway 466
The Canton-Kowloon Railway (Chinese Section).. 468
Formosan Sugar Industry 474
Y. M. C. A. Building at Peking..... 482
Development of Visayan Trade and Industries... 483
Reviews.. 484
Vulcan Shipyard at Hamburg......................... 484
The Flying Fish 486
Steel-Wire Concrete Reinforcement 487
Shanghai Native City Electric Light Plant....... 490
American Locomotive for Japanese Railways..... 491
British Locomotive for the Shanghai Nanking Railway.. 491

Ching has been made President, and Na Tung and Hsu Shih Chang the Vice Presidents, while Prince Yu Lang has been appointed minister of the Military Advisory Board with Prince Tsai Tao.

The Cabinet scheme as accepted is as follows, though some modifications were made: A president—only Princes of the three classes, or Dukes, or those with other high hereditary ranks, were eligible for the position.

Two Vice-Presidents.—Only Grand Secretaries of the Six Halls and Palaces to be appointed.

Ministers-of-State.—Number uncertain, they were to be filled by the Presidents or Ministers of the *Ministries* and Boards.

Four Secretaries and Councillors, (two each) only Sub-Chancellors and Readers or Compilers of the Grand Secretariat and the Hanlin College are eligible to occupy such posts. The rest consists of five Departmental Directors, ten managers and ten compilers.

When there are important affairs, officials specially appointed by the Throne may attend or assist the Cabinet.

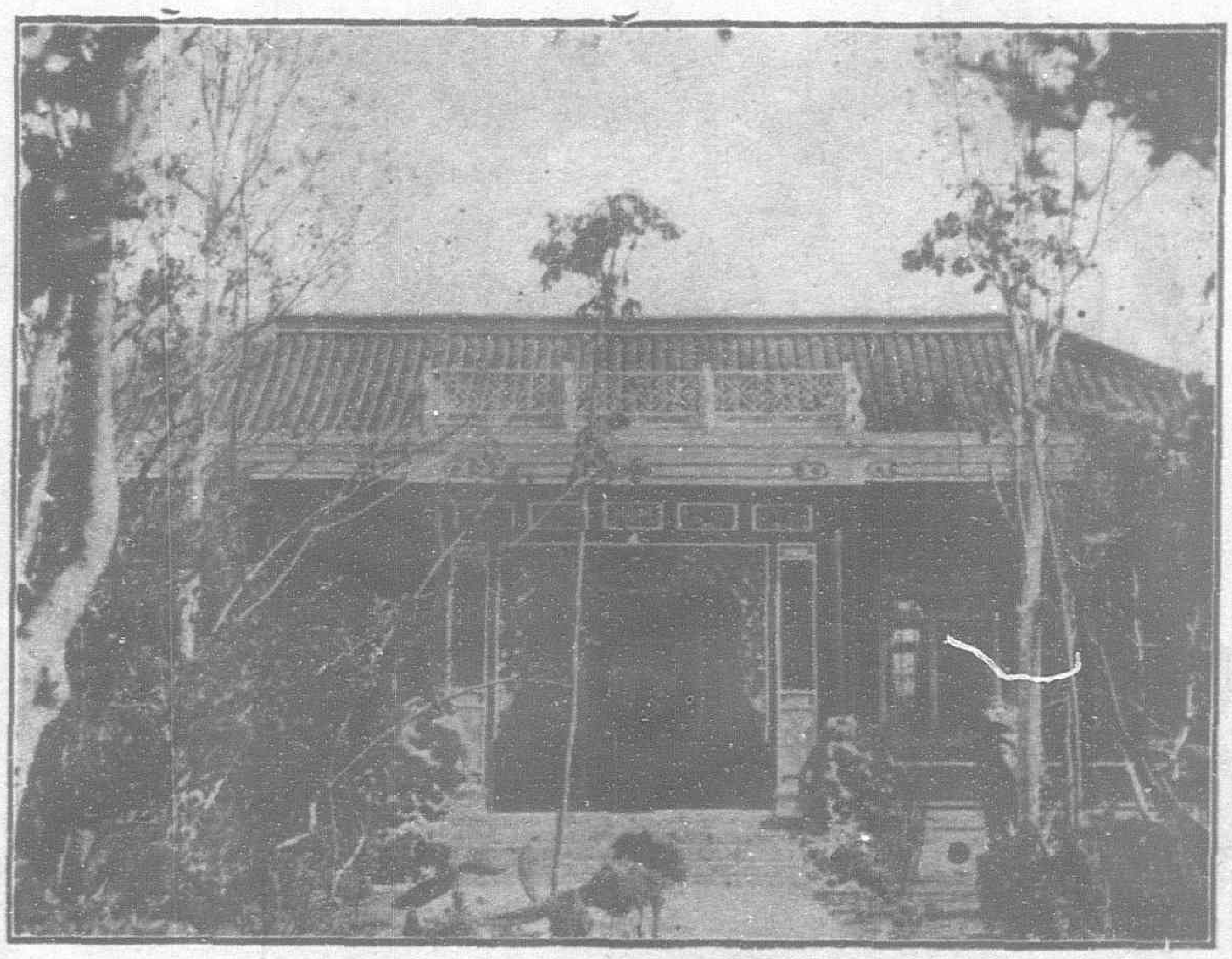
—(1) The Cabinet Ministers shall assist their Sovereign and assume responsibility for him in the Government of the Empire. (2) The President shall ascertain Imperial wishes and perform duties of the State. (3) The Vice-Presidents shall render assistance to the President in the Administration of the Government. (4) The Eleven Ministers shall each attend to the affairs of their respective Ministries. (5) When the Cabinet Ministers are confronted with too much business, officials may be appointed by Imperial Edicts to the Cabinet for assistance and consultation, and their number is not limited. (6) Cabinet Ministers shall not be allowed to hold other appointments or offices of importance concurrently. (7) The President and the Vice-Presidents shall attend the daily Audience; the Ministers of the Ministries shall meet in conference once in every five days.

(8) Cabinet Ministers shall sign their names on all the Edicts or Decrees and assume responsibility for same. To Decrees on affairs of secrecy, only the President and the Vice-Presidents shall sign their names.

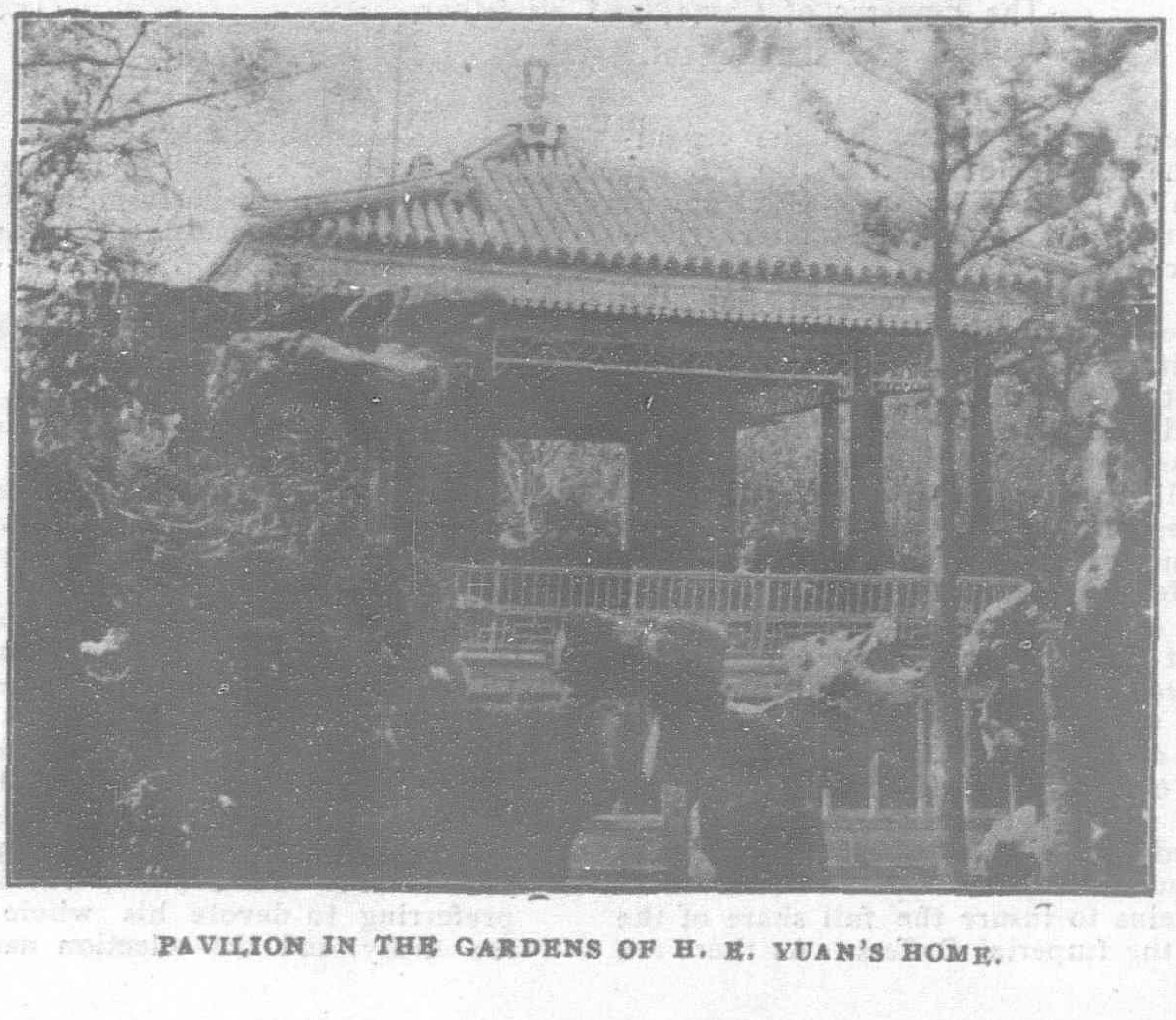
(9) When Cabinet Ministers submit any memorial affecting the Empire's administration as a whole, the President and Vice-Presidents shall sign their names in conjunction with those of Ministers of the Ministries.

(10) On occasions of deliberation on matters of weight and importance, the President shall be the Chairman.

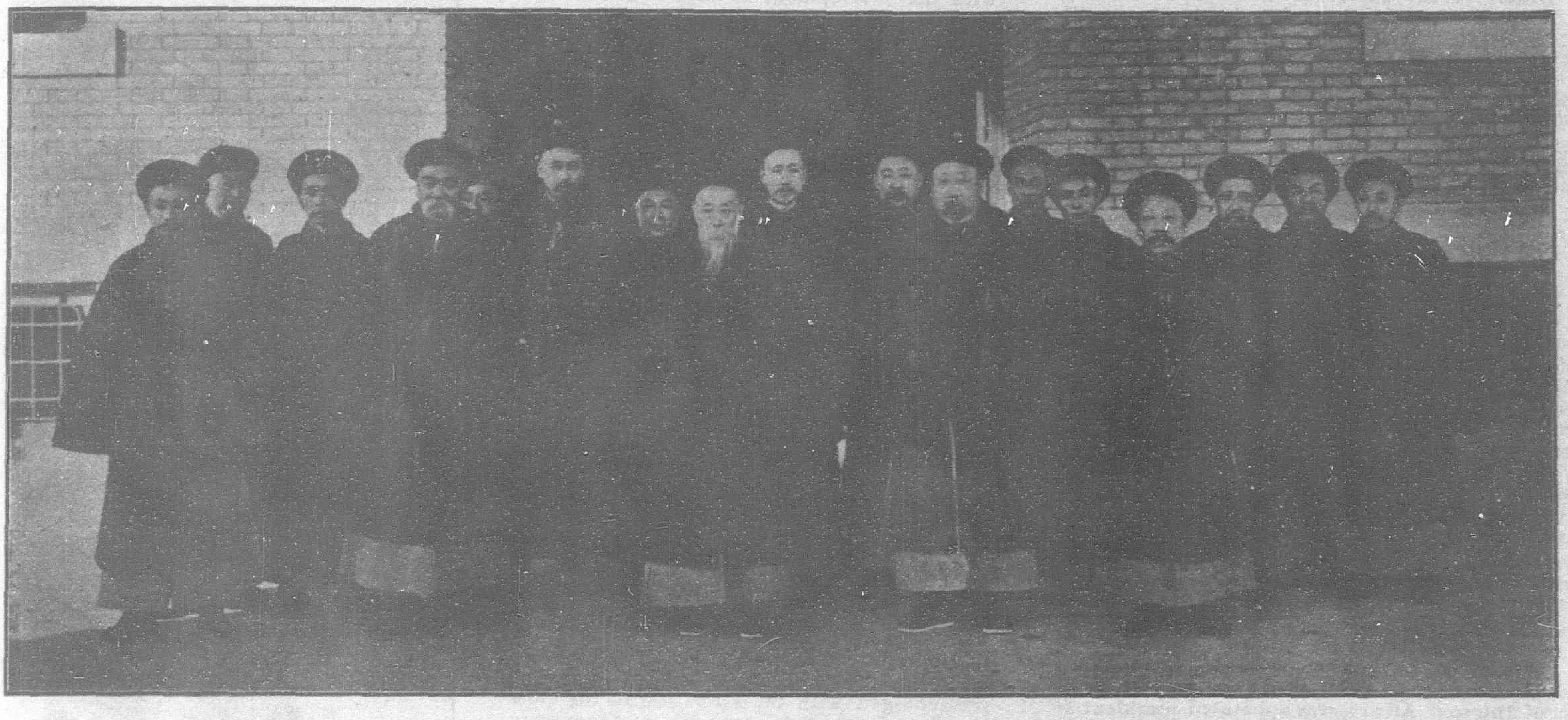
(11) Regarding affairs within the office of their duties, the Presidents and Vice-Presidents may issue Cabinet Orders (Council Orders.)



THE HOME OF H. E. YUAN SHIH-KAI.



PAVILION IN THE GARDENS OF H. E. YUAN'S HOME.



HIS HIGHNESS PRINCE CHING AND OTHER PROMINENT OFFICIALS OF THE WAIWUPU, CHINA'S FOREIGN OFFICE

Reading from Left to Right:—

Tsao Yu-lin, vice-president; W. W. Yen, councillor; Chen Niao ting, councillor; Tsou Chia-lai, junior president; Liu Ching-süng, councillor; Tseng Tsi-tsing, senior councillor; Wen Pu, councillor; H. R. H. Prince Ching, imperial president; S. K. Alfred Sze, deputy vice-president; Chow Tsz-hi, councillor; Na Tung, senior president; Liu Ching-sung, councillor; Hoo Wei-teh, senior vice-president; Liao Ngan-tow, councillor; B. C. Wan, councillor; Cheng Tseng-yao, councillor.

JUST FISHING

HIS EXCELLENCY YUAN SHIH-KAI AND HIS BROTHER ENJOYING LIFE. YUAN IS POLING WHILE HIS BROTHER FISHES.

(12) The two Secretaries, Senior and Junior, shall frame the draft of Edicts, publish or read the memorials and telegrams, control the daily routine of business, and appoint and dismiss all officials, in pursuance to the Orders of the Presidents and Vice-Presidents.

It is also said that six departments will be created, viz:—Edicts or Decrees; Merits and Services; Law Enactments; Casting of Seals; Audit; and Compilation.

The Grand Council is still the Grand Council, and reserves to itself its old functions of daily audiences with the Throne, and the power to sign edicts of importance, while all the members must sign the routine edicts and assume their share of responsibility.

Following the appointment of Prince Ching as President of the Cabinet and Na Tung and Hsu Shihchang as Vice Presidents, the Edict proceeds to name the heads of the different State Departments.

Foreign Minister—Liang Tun Yen was appointed Minister of Foreign Affairs. The selection of his eminent statesman will surely meet with general approval. He typifies the trend of China's modern policy to regulate her foreign loans so as to avoid encouraging the "spheres of influence" menace. Liang Tun Yen was among the students who returned from America twenty-five years ago. He was right hand man of the late Chang Chih-tung for many years and by training is eminently fitted for the position. Chou Chai-lai will be acting Minister until the return of Liang Tun Yen from America.

Minister of the Interior—Shan Ch'i (Prince Su), who has been appointed Minister of Internal Affairs, was appointed president of the Board of Interior in 1907 and Commissioner of Naval Reorganization in 1909.

Minister of Finance.—Tsai Tse, new Minister of Financial Affairs, is recognized as an official of promise. In 1905, he was chief of the Imperial Mission to foreign countries, served on the Reform Commission in 1906, appointed president of the Board of Finance, 1907 and as member of the Commission of Naval Reorganization in 1909.

Minister of Education.—Tang-Ching-Chung, Minister of Education, has served in a number of official capacities among which was his appointment as vice-president of the Board of Works in 1902, Literary-Chancellor, Kiangsu, 1904, Board of Civil Applicants, 1906, senior Vice-President, Board of Civil Office, 1907, and President, Board of Education, 1910.

Minister of War.—General Yin Chang, the Minister of War, is an official eminently fitted for this important portfolio at a time when the important program for the reorganization of the Chinese Military forces requires unusual force of character and experience in modern military methods. It will be remembered that he returned from Berlin to accept the presidency of the Board of War last year and has been very active in furthering plans for carrying out a comprehensive military scheme. He served as minister to Germany from 1901 to 1905 when appointed director of the Nobles College. The following year he became provincial commander-in-chief of the Kiangpei forces and was appointed Vice-President of the Army Board in the same year. In 1908 he was reappointed minister to Germany and the same year acted as inspector of the Autumn Maneuvers at Anhui before proceeding to his post. His latest appointment was that of Inspector General of Division in the vicinity of Peking.

Minister of Naval Affairs:—Prince Tsai Hsun, the Minister of Naval Affairs, brother of the late Emperor Kuang-Hsu, has been one of the most active of the Imperial Princes in furthering the Naval program. In 1909 he was appointed High Commissioner of Naval Reorganization and proceeded on a Naval Mission to Europe in October of that year. In July, 1910, he was appointed consulting member of the Government Council and in August of the same year proceeded on a Naval Mission to Japan and America.

Minister of Justice.—Shao-Chang, Minister of Justice, was appointed Secretary Board of Foreign Affairs in 1901; Sub-Chancellor of the Grand Secretariat with rank of Vice-President, Board of Ceremonies in 1905; Senior Vice-President of the Board of Punishments in 1906, and Vice-President Board of Laws, 1906.

Minister of Agriculture:—Pu Lun, Minister of Agriculture, Industry and Commerce, is a prince of the 4th Order, and among his many appointments he served as Imperial Commissioner to the St. Louis Exposition, president of the Tz'u Cheng Yuan, or Senate, 1907, special service in selecting site for the late Emperor's tomb, and was appointed Lieut. General of the Plain White Banner in 1910.

Minister of Posts and Communications.—Sheng Hsuan-Huai, Minister of Posts and Communications, has been identified since 1886 with the development of lines of communication throughout the Empire, as director of the Chinese Telegraph administration. He was appointed customs taotai of Chefoo (1886), and of Tientsin (1892). In 1896 he was made administrator of the Lu-Han and Southern Railways; in 1901, guardian of the heir-apparent; in 1902, Senior Vice-President of Works and Commissioner for Treaty Revision; Junior Vice-President of the Board of Communications, 1908; President of the Red Cross, 1910; and especially appointed to assist the Board of Finance in currency matters in August, 1910.

Minister of Dependencies. — Shou Chi, Minister of Dependencies, has had an active official career of which the first appointment leading to his recognition in this deparment was that of the Mongolian Superintendency in 1900.

In 1907 he was advanced to the position of President of the Board of Dependencies and in the same year became a member of the Government Council. In 1909 he was named as Assistant Superintendent of the Hatamen Octari.

Minister Military Advisory Council—Prince Tsai Tao, brother of the late Emperor, and Prince Yu Lang, as previously mentioned, were appointed Joint Ministers of the Military Advisory Council. Prince Tsai Tao has been active in Military Affairs since 1908 when he was charged with the formation of the New Imperial Guard. In 1909 he was appointed Chief of the General Staff and proceeded on a mission to Japan, America and Europe to study military matters in 1910.

Prince Yu Lang has been active in police and military matters since 1905 when he was appointed President of the Board of Police. He assisted Prince Tsai Tao in the formation of the Imperial Body Guard in 1908 and was appointed General Commander of the Peking Gendarmerie in 1909. He became a Grand Councillor in August, 1910.

President of the Privy Council—By the same decree Lu Jun-hsiang, former Grand Secretary and now High Commissioner for Opium Suppression was named as President of the Privy Council with Jung Ching, President of the Board of Ceremonies, as Vice-President.

Besides announcing the appointments the Imperial Edict reviews the imperial progress towards the establishment of the Cabinet Council. The original decree of last year, followed by the memorial of the Commission of Constitutional Reform presenting a preparatory program to that end; then in due course followed the joint memorial of the Commission of Constitutional Reform and the Council of State Affairs setting forth in detail the new Cabinet-Council system and as the Edict reads:

"We have perused it carefully and found that its provisions based on the constitutions of the foreign constitutional monarchies and revised to conform to the conditions at present prevailing in China, and that they have been very carefully compiled and are fairly satisfactory. They have also submitted that as the Cabinet system is a new thing introduced into the Chinese system of government for the first time it should be enforced cautiously and considered as an experiment, and have with that object in view drawn up fourteen provisional regulations for the management of public affairs by the Cabinet. The said regulations in some respects increase and in others curtail the power of the Cabinet and are acceptable. We have received the princes and ministers of the Council of State Affairs in audience and personally asked them to express their opinions, which are practically all the same. We hereby order that the Cabinet official system be promulgated and carried into effect and that the same be enforced and a Cabinet Council be established in accordance with the aforesaid provisional regulations as an experiment. With the exception of the Privy Council system, which is promulgated at the same time as the Cabinet official system, the official systems of the offices subsidiary to the Cabinet and the Metropolitan and Provincial official systems and regulations are hereby ordered to be speedily drawn up in accordance with the program of Constitutional Reform and submitted to Our approval for promulgation and enforcement, so that Our intention for carrying out constitutional reforms and making the country strong and powerful may be realized."

LU-CHING
COMMISSIONER OF EDUCATION, MUKDEN

TAOTAI HAN KAO CHIEN
COMMISSIONER OF FOREIGN AFFAIRS FOR THE MANCHURIAN VICEROYALTY

THE "FOUR NATIONS" LOAN

The conclusion of the currency loan negotiations brings to an end the first skirmish of one of the most stubbornly contested diplomatic struggles of the last decade, with the honors of victory to the American Secretary of State and his lieutenants in the field, Minister Calhoun and Willard D. Straight. The stake at issue has been the integrity of China, menaced by the aggressive policies of Russia and Japan, involving another clash between these two powers in which the neutrality of China would again be violated, and Manchuria subjected to the horrors and ravages of another war for its possession. We pointed out, over a year ago, that there was no good or legitimate reason why a war between Russia and japan should be fought on Manchurian soil unless the possession of that territory was the objective prize. Russia has been making strenuous endeavors to strengthen her forces east of Baikal and regain her lost position, compelling Japan in self defense to adopt aggressive measures in Manchuria to safeguard her hard won fruits of victory. There can be no doubt if events had been allowed to take their course, another year would have witnessed a renewal of hostilities between the two powers, with Russia in a more favorable position to win the victory on land. In this event, Japan would be compelled to vacate Manchuria, relinquish Korea, and revert to her old position with Russia threatening the very existence of the Island Empire, and Manchuria irretrievably lost to China.

It was this condition of affairs which influenced Mr. Knox, the American Secretary of State, to propose the neutralization of the Manchurian railways, as the most effective means of preserving the peace of the East, and the integrity of China's Three Eastern Provinces. The firm refusal of Russia and Japan to consider a proposal emanating from the highest motives on the part of America, served to create the feeling throughout the world that despite their oft repeated assurances to the contrary both powers had ulterior designs on China's territory.

This doubt became a firm conviction, when the same powers supported by their allies, Great Britain and France, opposed the construction of the Chinchow-Aigun Railway, a line which would have enabled China to defend the neutrality of Manchuria in the event of hostilities between Japan and Russia. China was bulldozed into temporarily relinquishing her undisputed rights to construct railways within her own territory without first consulting the wishes of her neighbours, thus creating a dangerous and iniquitous precedent, boding ill for the progress and peace of the Empire, and reasserting in no uncertain manner a reversal to the old sphere of influence policy and the utter collapse of the Open Door doctrine.

This railway line was to have been financed by America, and constructed under contract by a British firm. The attitude of the British Government, in refusing to support their own nationals on the grounds that the contract conflicted with the Scott-Muravieff sphere of influence agreement of 1898, which had not been abrogated, only intensified the situation, and isolated America at the outset of her re-entrance into the world of Far Eastern politics. The situation revealed America standing apparently alone for the maintenance of the Open Door principle and its application to Manchuria, incurring the deep resentment of Russia and Japan, who professed to see selfish motives in her attitude.

It is perhaps unfair to Russia and Japan to impugn their good intentions towards China, and concentrate the fierce light of publicity on their policy in Manchuria, and ignore similar conditions in other parts of China where European powers have the same rights and spheres of influence. The only answer to this lies in the fact that the press of other countries refrain from commenting on the shortcomings of their own national policies and magnify the situation in Manchuria to divert attention from their own spheres. Germany in Shantung, France in Yunnan and Great Britain in Hongkong hold the same relative position to China, as Russia and Japan do in Manchuria. The efforts of the Chinese to build the Chefoo-Weihsien Railway and develop the port of

H. E. HSI-LIANG,

WHO RETIRES FROM THE VICEROYALTY OF MANCHURIA, TO GIVE PLACE TO H. E. CHAO EHR-HSUN.

H. E. CH'EN CHAO-CHANG,

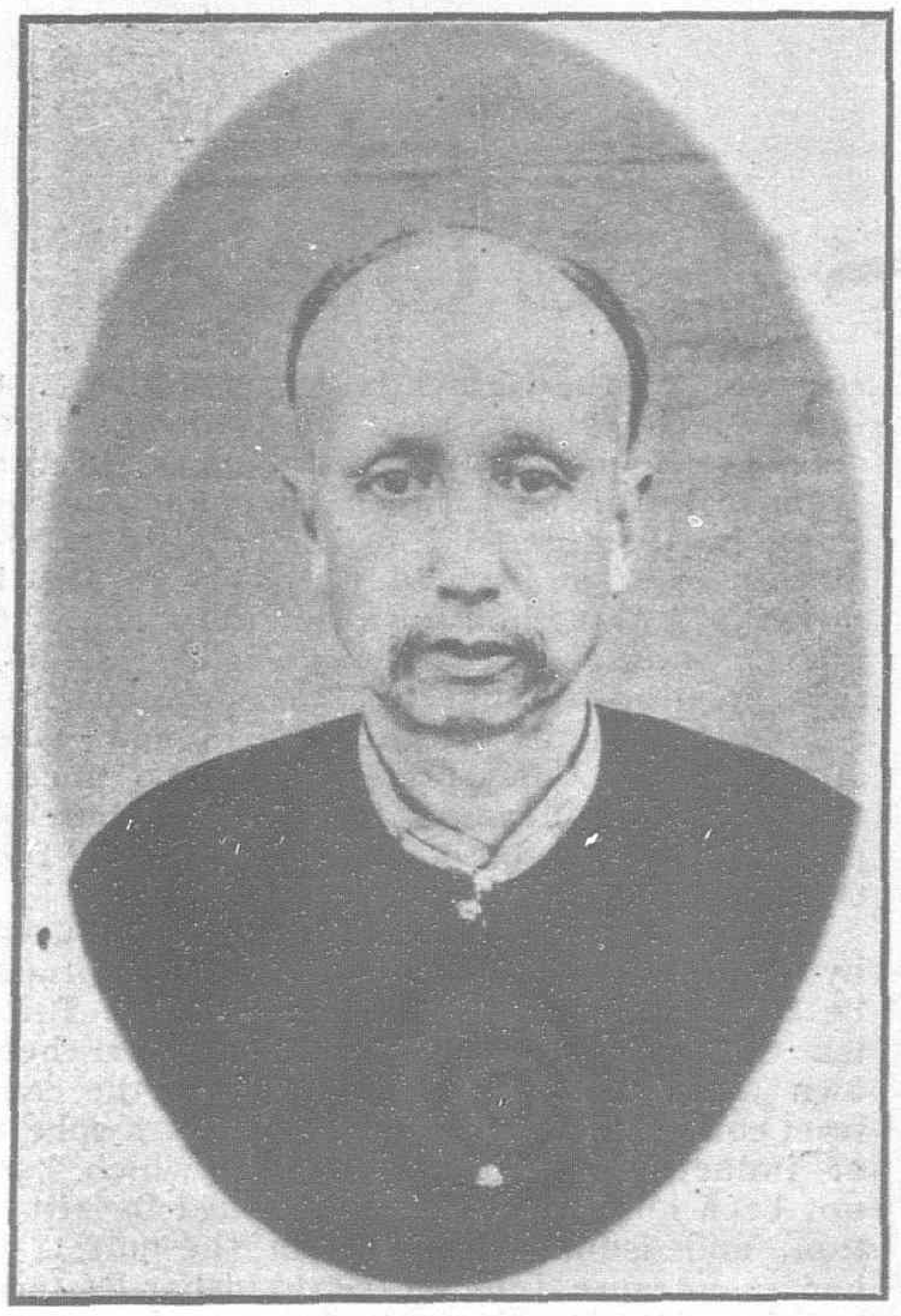
GOVERNOR OF KIRIN PROVINCE.

CHANG YUAN-CHI,

COMMISSIONER OF CIVIL OR INTERNAL AFFAIRS TO THE FENGTIEN GOVERNMENT.

HIS EXCELLENCY CHOU SHU-MU,

GOVERNOR OF HEILUNGKIANG PROVINCE (TSITSIHAR)



H. E. SA-LIEN

VICE PRESIDENT OF THE BOARD OF CEREMONIES

H. E. TSEN CH'UN-HSUAN,

ONE OF CHINA'S GREAT EXECUTIVES NOW IN RETIREMENT. HIS REAPPOINTMENT TO OFFICE HAS BEEN STRONGLY URGED.

H. E. SHEN CHIA-PEN

UNTIL RECENTLY, VICE PRESIDENT OF CHINA'S FIRST CONSTITUTIONAL ASSEMBLY

Chefoo, as an offset to Tsingtau, has, according to Chinese official reports, met with the decided opposition of German interests, though the incident has never been permitted to reach the acute diplomatic stage. China is barred from connecting her central provinces with the sea by a direct railway outlet through Shantung, without strengthening Germany's hold on the province, and she is now seeking to offset this advantage by the construction of the Kaifeng-Haichow line, and a deep water port at the latter place. In principle the situation is identical with the one in Manchuria. Deprived of Port Arthur and Dairen, her best harbors in the North, China intends to create a new ice free port at Halutao, and construct the Chinchow-Aigun Railway for strategic and commercial reasons, but Japan and Russia have temporarily blocked these measures to preserve their hold on the territory and insure a profitable return on their railways. The attention of the world is skillfully focussed on Manchuria, while the identical situation in Shantung is never discussed.

In the Peking Agreement of 1905 China bound herself not to construct railways in Manchuria, parallel to or competing with the Japanese South Manchuria line, and when the Fakumen line was proposed Japan insisted on her interpretation of a very indefinite clause to prevent its construction.

But a similar clause exists in the Shanghai-Nanking and Canton-Kowloon Loan Agreements entered into with Great Britain, prohibiting the construction by China of competing lines between these points.

France in Yunnan holds the same relative position. Her Yunnan railway makes Haiphong in Indo-China the port of the Upper Yangtsze region, and she has also opposed the construction of any lines in South China which might weaken her influence over this sphere. Here also China is at present engaged in surveying a line from Yunnan to the Sea by the way of the West River valley, as an offset to the French line and to divert trade into her own port at Canton, or some other outlet at the delta.

H. E. SHIH SAO CHI (SAO KE ALFRED SZE)

JUNIOR COUNCILLOR OF THE BOARD OF FOREIGN AFFAIRS. IMPERIAL REPRESENTATIVE AT THE INTERNATIONAL PLAGUE CONFERENCE AT MUKDEN, (GRADUATE OF CORNELL.)

H. E. LIU JO-TSENG

VICE DIRECTOR OF THE HIGH COURT OF JUSTICE, THE SUPREME COURT OF CHINA.

H. E. TSAO JU LIN
SENIOR VICE PRESIDENT OF THE BOARD OF FOREIGN AFFAIRS

H. E. LI CHIA-CHU
VICE PRESIDENT OF THE BOARD OF EDUCATION

H. E. NA CHIN
SECRETARY OF THE INNER COUNCIL, BROTHER OF NA-TUNG

As Russian influence predominates in Northern Manchuria and Japanese in the South, so does Germany exert her influence in Shantung and France in Yunnan. While no direct charges of violations of the Open Door principle in these other spheres have been advanced, the trade is firmly in the hands of the countries holding the advantage, and the German merchants in Shantung and French in Yunnan outnumber those of all other nationalities, the same as the Russians and Japanese do in Manchuria. With the same intense international competition for the control of the Yunnan or Shantung markets as exists in Manchuria, the same conflict of national interests and charges of preferential treatment must inevitably develop.

The principle underlying the opposition of Russia, Japan, France and Great Britain to the construction of the Chinchow-Aigun line if admitted as a precedent meant a complete breakdown of the Open Door policy, a reversal to the spheres of influence, denial of China's sovereign rights to build lines within her own territory, effectively blocking her progress, with partition as the inevitable sequel. The establishment of the principle gave to Germany the right to block the construction of the Kaifong-Haichow Line, to France, the proposed Yunnan-Kwangsi project, and Great Britain the westward trend of the Yunnan or Szechuan-Tibet roads, while Russia could check any move on the part of the victim to develop or defend Mongolia or Sinkiang by the extension of railways.

Japan had consented to the construction of the Chin-Ai line with certain concessions, but Russia stubbornly rejected every modification of the scheme as threatening her strategical position on the Amur. The principle seemed in a fair way to be established and the work of years of constructive diplomacy set at naught. Knox's statesmanship was ridiculed as having brought no prestige to America, and the American group of financiers, who had patriotically entered the field at the earnest solicitation of the Government, were charged with endangering the peace of the country through desire for private profit by the exploitation of China. There seemed little hope of altering the situation, except through friendly diplomatic negotiations with Russia, with no certainty of overcoming her opposition.

It was at this juncture that the present currency loan was broached, and a preliminary agreement drawn up by the Chinese authorities

H. I. H. PRINCE TSAI JUN
PRESIDENT OF THE NOBLES' COLLEGE AT PEKING

H. I. H. PRINCE PU LUN

HIS EXCELLENCY HSU SHIH CHANG,
GRAND COUNCILLOR.

H. E. JUI CHENG
VICEROY OF THE HU KWANG

LIEUTENANT GENERAL TSENG-CHI, OF THE MONGOL PLAIN YELLOW BANNER CORPS; TARTAR GENERAL AT CANTON; AN ASPIRANT FOR THE POST OF VICEROY OF MANCHURIA

and the American Minister at Peking, which was duly signed and accepted by the temporary representative of the American Group. This agreement stipulated that the loan was to be purely American in character and employed for the reform of the currency and certain industrial developments in Manchuria. The American Group in signing this preliminary agreement were fully aware of the difficulty of successfully floating the bonds on the American market, and were prepared to take up the entire issue out of their own resources if necessary to support their own Government and preserve the confidence of China.

The fact that a New York City Loan of a few millions was difficult to float in the American market has been used by the opponents of the Administration and rivals of the Group to indicate their inability to handle this loan successfully. And as usual this story has circulated around the world, and nearly every paper in the East enlarged on it without any knowledge of the peculiar conditions surrounding the floating of a 4% Municipal loan in America, when other more profitable railway and industrial issues are on the market. It is self evident that when a combination of Morgan, Rockefeller, and Kuhn Loeb & Co. affix their name to an agreement of $50,000,000, their immense resources fully enable them to carry it through, even though the entire issue be locked up in their own vaults as their own investment.

H. E. CHANG JEN-CHUN
VICEROY OF THE LIANG KIANG

The purely American character of the loan isolated still further that country, and, with the application of $15,000,000 to Manchurian industries, placed the sole responsibility of maintaining the neutrality of the province on America, and placing her in direct conflict with the terms of the recent Russo-Japanese Agreement. Followed to its logical end, it meant that America must assume, unaided, the task of preserving the neutrality of China against the alleged designs of Russia and Japan.

There were many good and sufficient reasons why the other powers through their financial groups should be invited to participate in this loan. As they would be the greatest losers by the establishment of a stable currency in China, common equity demanded they be allowed a share in the profits of the loan. But higher political reasons made it almost imperative that the European Groups should participate on equal terms, so as to effectively bring about the partial neutralization of Manchuria.

Had the American Government been actuated by the mercenary spirit charged by its critics and William J. Bryan, and if the so-called Dollar Diplomacy was only a disguise for advancing the special interests of Wall Street, regardless of future national entanglements, the $50.000.000 loan would have remained purely American, and the profits kept at home.

The agreement, signed in London last October between the four groups to participate equally in all future loans to China, included in its provisions the purely American currency loan for $50,000.000 and also the American-Chinchow-Aigun loan for $30,000.000. And here at the outset the Americans demonstrated to the world that they were faithfully adhering to their traditional policy of equal opportunity in China. For a while it looked as though the Chinese Government would decline to admit the participation of the other groups, and would hold to the letter of the preliminary agreement, providing for a purely American loan. This temporary opposition, however, disappeared when the full signifi-

H. E. LI CHING-HSI
VICEROY OF THE YUN-KUEI

CHINA'S RAILWAY TANGLE

Now that the currency loan negotiations have been brought to a successful termination, China has time to turn her attention to the perplexing railway problem which confronts the country through the opposition of the provinces to the application of such foreign loans as are manipulated through the central authorities at Peking. Until this question of authority is definitely settled, railway development will continue at a stand still, and progress be delayed. The crux of the situation lies in the provinces of Hunan and Hupeh where the gentry have openly threatened to revolt if the foreign Hukwang loan is applied to the construction of the Canton-Hankow-Szechuen lines.

Public opinion, in Hunan especially, is unanimous on the point of building their portion of the southern trunk line with their own funds, and heroic measures are apparently being taken to raise the necessary annual allotment on the shares to carry on the construction. But the funds are slow in materializing, and with the waste and extravagance and judging from the progress made to date, only a small portion seems to be expended in actual construction work. However, the Hunanese are supremely satisfied and elated over their success in thwarting the use of foreign funds, and hold their heads high as great patriots whose example should be followed by all other provinces. And in the face of such opposition the Central Government at Peking seems powerless to impose its will. Events are moving rapidly in China, and the signs of the times point to troublous days for the Empire in the near future, and further humiliation seems inevitable unless the government is prepared to preserve its prestige by a show of force at the critical moment. The Throne has compelled the Viceroys and Governors to recognize the Central authority over the new army, the command of which is now firmly under the Minister of War. Millions are annually expended in the feverish haste to organize and perfect the 36 new army divisions, and the provinces have recognized the urgency of this step, and are readily contributing every support to the new military program. On all sides China is having troubles with her neighbors: Russia on the North, Japan on the Yalu, France and Great Britain in Yunnan have all raised issues with China over the boundaries, and China in her defenseless state must always yield the point. Revolutionary societies in the South are a constant menace to the peace of the Empire, and a resolute leader could readily set up the standard of revolt, secure in the knowledge that lack of transportation with the North would facilitate his campaign and chances of success. When the hour strikes for China to mobilize her new army at any given point, the lack of transportation will impossibilitate the movement, and humiliation again will be her lot. The high spirited, proud and patriotic Hunanese whose stiff necked prejudice prevents the linking together of North and South, will then go down in Chinese history and be execrated by their countrymen as the real cause of defeat. The safety of the Empire demands the construction of this line without delay, and it would be far better for the Imperial authorities to brave the threatened revolt at once, than continue to jeopardize the integrity of the country by further parleying with the misguided patriots of Hunan.

If the Throne had the power to centralize the command of the new army under the Ministry of War, for the best interests of the Empire, identical urgent reasons of State demand that the same policy be adopted with regard to the railways, as without the latter the army is helpless, and the huge sums expended in its creation and organization will be wasted. Either the Hunanese should immediately give sufficient guaranties of their ability to construct this line without further delay, or the Imperial Government should assert its prerogatives and proceed to build it, by force if necessary.

And the same argument holds good with other provincial lines, whose promoters are obstructing the progress and safety of the Empire through mistaken ideas of provincial rights.

H. E. WU TING-FANG,

RECENT MINISTER TO AMERICA. IT IS RUMORED THAT HE WILL BE CALLED TO TAKE THE POST OF JUNIOR PRESIDENT OF THE BOARD OF FOREIGN AFFAIRS.

H. E. LIANG SHIH-YI

DIRECTOR GENERAL OF RAILWAYS, REMOVED FROM OFFICE AND THE POST ABOLISHED BY THE NEW PRESIDENT OF THE BOARD

TAOTAI K. Y. KWONG

FORMER CHIEF ENGINEER OF THE CANTON-HANKOW LINE, TRANSFERRED TO DIRECT THE CONSTRUCTION OF THE KAIFENG-HAICHOW RAILWAY. EDUCATED IN AMERICA

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cance of the move was made apparent to the high Chinese authorities, and the negotiations then settled down to a discussion of minor points for the guarantee and supervision of the loan.

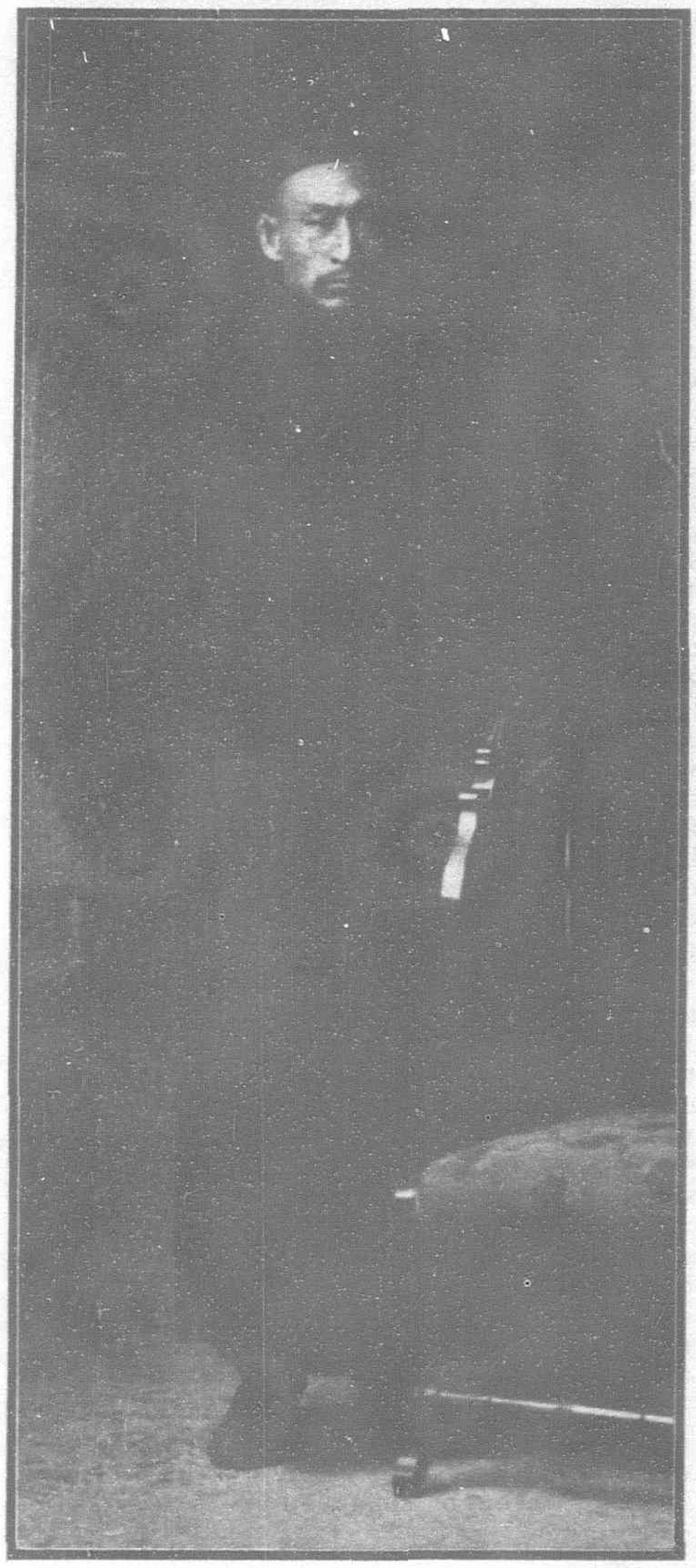
The final agreement stipulates that the revenues on tobacco, spirits, produce and the consumption tax in Manchuria, amounting to Tls. 2,500,000 and the salt surtax of all the provinces of China, amounting to Tls. 2,500,000 are pledged as security for the loan. And the neutralization scheme of the American Secretary of State, which was rejected by Russia and Japan and ridiculed and condemned by Europe, has been recognized and accepted in a modified form. Instead of America alone assuming the responsibility for the neutrality of Manchuria, Great Britain, France and Germany are now equally interested with her in this province, and the sphere of influence tendency has received another setback by the hypothecation of revenue from all the provinces.

It is natural that the terms of the loan should call forth sharp criticisms from the jingoistic Japanese press, who profess to see in the hypothecation of the Manchurian revenues a menace to their trade and political expansion in their peculiar sphere of influence. There is, however, little danger of foreign interference in Manchuria, while the revenues of the province are sufficient to meet the interest. So long as Manchuria is permitted to peacefully develop its enormous natural resources, its wealth and revenues will increase by leaps and bounds, and the occasion will never arise to justify foreign control of the revenues as a safeguard for the bondholders. The real menace to the prosperity and progress of this rich territory lies in the possibility of a conflict arising out of the ambitions of Russia to retrieve her defeat. If Japan's oft repeated declarations of friendship for China are sincere, and she harbors no designs on China's territory or sovereign rights, the Island Empire has every reason to feel well satisfied with the creation of a situation which effectively ties Russia's hands, and creates a buffer state between the Amur and the Yalu. The neutrality of Manchuria, which seemed such an idle dream, is brought within the realms of reality, and with this as an accomplished fact, the peace of the East is assured.

—G. B. R.

FOREIGN ADVISERS IN CHINA

Mr. J. K. Ohl, the well known Peking correspondent of the New York Herald, explains, in an article to his paper, the Chinese side of the argument against the further employment of foreign advisers for the various branches of the Chinese Government. This question assumed considerable prominence during the negotiations leading up to the final signing of the Currency Loan, through the persistent and erroneous reports spread broadcast that America had demanded the appointment of an American Financial Adviser to supervise the finances of the Empire and the application of the new loan, as a condition to advancing the funds. This report had its foundation in the fact that the American Group had insisted that a foreigner be appointed as a special auditor or inspector whose functions would be limited to certifying that the loan funds were expended according to the provisions of the new currency scheme, and not divested into other Channels. The

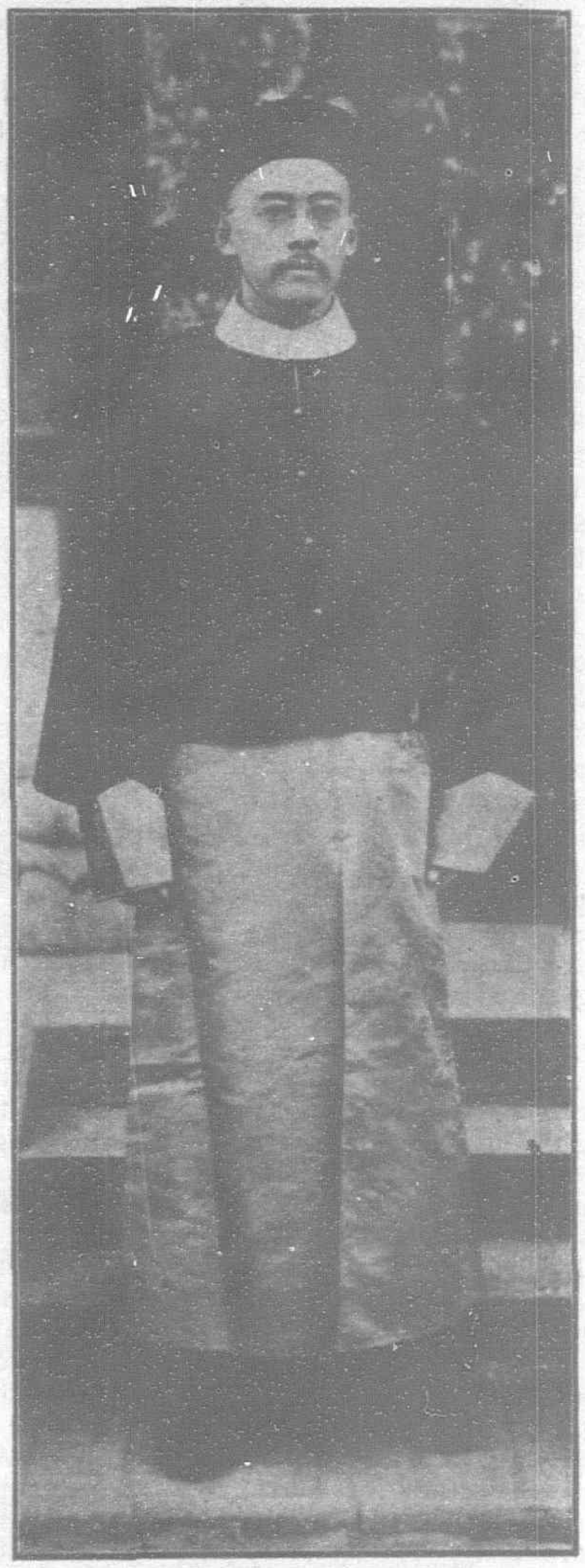


C. Y. YUN

ASSISTANT TO THE DIRECTOR GENERAL OF RAILWAYS. EDUCATED IN TROY POLYTECHNIC INSTITUTE 1884

TAOTAI K. S. LOW,

FORMER MANAGING DIRECTOR OF THE TIENTSIN-PUKOW RY., SOUTHERN SECTION. GRADUATE OF TROY POLYTECHNIC INSTITUTE. AT PRESENT HE HEADS THE SURVEY PARTY FOR THE PROPOSED LINE FROM YUNNANFU TO THE WEST RIVER VALLEY AT CANTON



YEN TE-CHING, C. E. DR. ENG., A. M. AM. S. C. E., ETC.

ASSISTANT CHIEF ENGINEER OF THE SZECHUAN RAILWAY. GRADUATE OF LEHIGH UNIVERSITY

TAOTAI CHOU HSUEH-HSI

PRESIDENT OF THE ANHUI RAILWAY, A SON OF VICEROY CHOU-FU

The Anhui, Kiangsi, Kiangsu, Chekiang, Lotung, Fukien and the Canton-Hankow lines are all in a state of financial collapse and unable to proceed with construction. Owing to the high rate of interest prevailing in China native capital is almost impossible to secure for railway development, and the outlook seems hopeless for any great construction progress emanating from this source. The Central Government refuses to guarantee the bonds of provincial companies, and foreign financiers decline to advance the funds unless this guarantee is forthcoming. The provincial promoters, however, persevere, and hawk their projects around the money market seeking some unsophisticated agent who will advance funds on local guarantees. Progress is checked, and construction work almost at a standstill awaiting the solution of the situation. The Imperial Government should assert its authority, take over the provincial lines and concessions, and proceed with their construction for the best interests of the Empire, or demand sufficient guarantees from provincial shareholders that a certain schedule of construction be maintained under penalty of forfeiting the concession.

—G. B. R.

TAOTAI JEME TIEN-YU

DR. ENG. A. M. I. C. E., ETC. CONSULTING ENGINEER TO THE YUCHUANPU. CHIEF ENGINEER OF THE SZECHUAN AND CANTON-HANKOW RAILWAYS. GRADUATE OF YALE.

importance of this loan to China is so great and far reaching that every precaution was necessary not only to guarantee the bondholders but to protect China itself against the possible dishonesty of her own officials. The discussions concerning the appointment of the inspector revealed a deep rooted opposition on the part of China to the employment of any foreigner in any capacity which made him independent of the Chinese Government. Mr. Ohl explains the real Chinese attitude towards Sir Robert Hart, around whose distinguished name a glamour of romance has been built.

"It may surprise persons unfamiliar with China to be told that invariably the first illustration cited by Chinese in this connection is Sir Robert Hart.

"In the Chinese criticism of Sir R. Hart there is no suggestion of lack of fidelity. So far as I have been able to discover, no Chinese questions the honesty and integrity of Sir Robert or the administration of which he is still the titular head.

"Those who voice the broader criticism are the progressive men of China, the men most keenly alive to the necessity of a regeneration of the government and the proper development of the country and who, therefore, are advocates of the employment of foreign experts as necessary instruments. These men hold in their hearts bitter resentment toward Sir Robert Hart as the man more responsible than any other for building up among the Chinese a sentiment antagonistic to foreign employes, and, in consequence, retarding China's development.

"They assert that since 1868 Sir Robert, with his own and other governments at his back, has kept the customs a wholly foreign institution. In all that long period of time not a single Chinese has been permitted to hold a position of responsibility in it, and yet it is a branch of the Chinese government.

"It is not that the Chinese begrudge the money or that they look at the question from a mere office holding viewpoint. They contend that Sir Robert Hart's administration has caused the Chinese people to believe that the employment of foreigners in any of the institutions of the Chinese government means foreign control of those institutions.

"If he had built up the customs administration as a truly Chinese and not a distinctly foreign institution, he would, the Chinese assert, have performed a vast service to this country and every progressive would to day be singing his praise. As it is, they feel very bitterly toward him."

And while his fellow countrymen may fairly resent any criticism of Sir Robert Hart's life work, they must be prepared to face the inevitable verdict history will direct against the action of their government in converting a distinctly Chinese department into a purely British bureau. To Sir Robert Hart as the head and organizer of the Imperial Maritime Customs, the world has ceded the honor and praise for the efficient and honest operation of a service, which in its inception and for years afterwards was an international institution. Its success and efficiency was based entirely on the fact that the service was open to all nationalities, and good, honest, earnest men sought and obtained posts, with the natural ambition of some day reaching the top of the ladder. It is a fact that in the early days and up to within ten years, Sir Robert's best lieutenants and commissioners were other than British, and the successful and honest working out of the system was due largely to their hearty and loyal co-operation.

H. E. SHENG KUN PAO,

PRESIDENT BOARD OF COMMUNICATIONS.

Then without any warning, to guarantee the British bondholders of Chinese securities, the British Government exact the promise from China that as long as British trade predominated in China, the Inspector General of Customs must be a British subject. Under existing conditions at that time, and in view of the many intrigues on the part of other European powers to secure the appointment for an official of their own nationality, the British Government acted wisely and well for its own interests.

But, in so doing, the door of equal opportunity, which had stood open for years and attracted the best men of all countries to the service, was slammed in their face, and they found instead of serving an international institution they were puppets in a British bureau, with no hope of ever reaching the top. Exigencies of politics amply justify British action, but they must be prepared to accept the inevitable results. No ambitious young man of American or other nationality selecting a career will enter in service whose highest positions are pre-empted by Great Britain. Already complaints are heard about the degeneracy of the service and the impossibility of securing good men to fill the vacancies. When Great Britain insisted that only a British subject could honestly administer the Chinese Customs to the satisfaction of British bondholders, it reflected on the honesty of other officials of the Customs. Now when the older men who made the service are retiring, and it needs strengthening with new blood, it is impossible to again enlist the sympathy and services of the best men of other nationalities.

As it is, Sir Robert Hart's policy, which built up the Customs as a purely foreign institution, and closed the door to those other than British, and his failure to grant some concessions to Chinese, has brought down on the service the distrust of the latter and indifference of other foreigners, and now if the service needs regeneration or new blood, Great Britain must either open the door to the higher positions or recruit the service from the best of her own.

Mr. Ohl continues and cites the case of Sir Robert Hillier as follows:

"The Chinese do not build their case on one experience alone. When, for instance, in talking with a high official of the Foreign Office, I repeated to him the general criticism of responsible officials for not availing themselves more freely of the services of Sir Walter Hillier, who for two years held the position of adviser to that department, his reply was:—'How could we? Whenever a case came up involving the British government he talked of 'we' and 'our Government,' meaning always the British government, not the government of China, which he was employed to serve."

These two examples are alone cited by Mr. Ohl as the reasons underlying the antagonism of China to foreign advisers. On the other hand there are instances where foreigners have subordinated their own national interests and given their best services to China's cause.

Sir Robert Bredon, the distinguished assistant to Sir Robert Hart, is a case in point. He paid the penalty however by forfeiting the support of his own government and other Britishers in China.

Dr. J. C. Fergusson for many years held the post of Foreign Secretary to H. E. Sheng Kung Pao when the latter was Director General for all the railways, and at the same time was Adviser to the Viceroys of the Liang Kiang and the Hukwang, and the Taotai of Shanghai. The highest tribute that can be accorded Dr. Fergusson is that he was intensely loyal to the country he served, and in faithfully and honorably discharging his duty' was invariably compelled to oppose the interests of his own countrymen. Sir Robert Bredon or Dr. Fergusson will never receive the appreciation of the interests they opposed, and their only hope of recognition must come from the Chinese Government.

There are other cases to the point, to fully vindicate China's intense antipathy to any further foreign interference through the appointment of advisers.

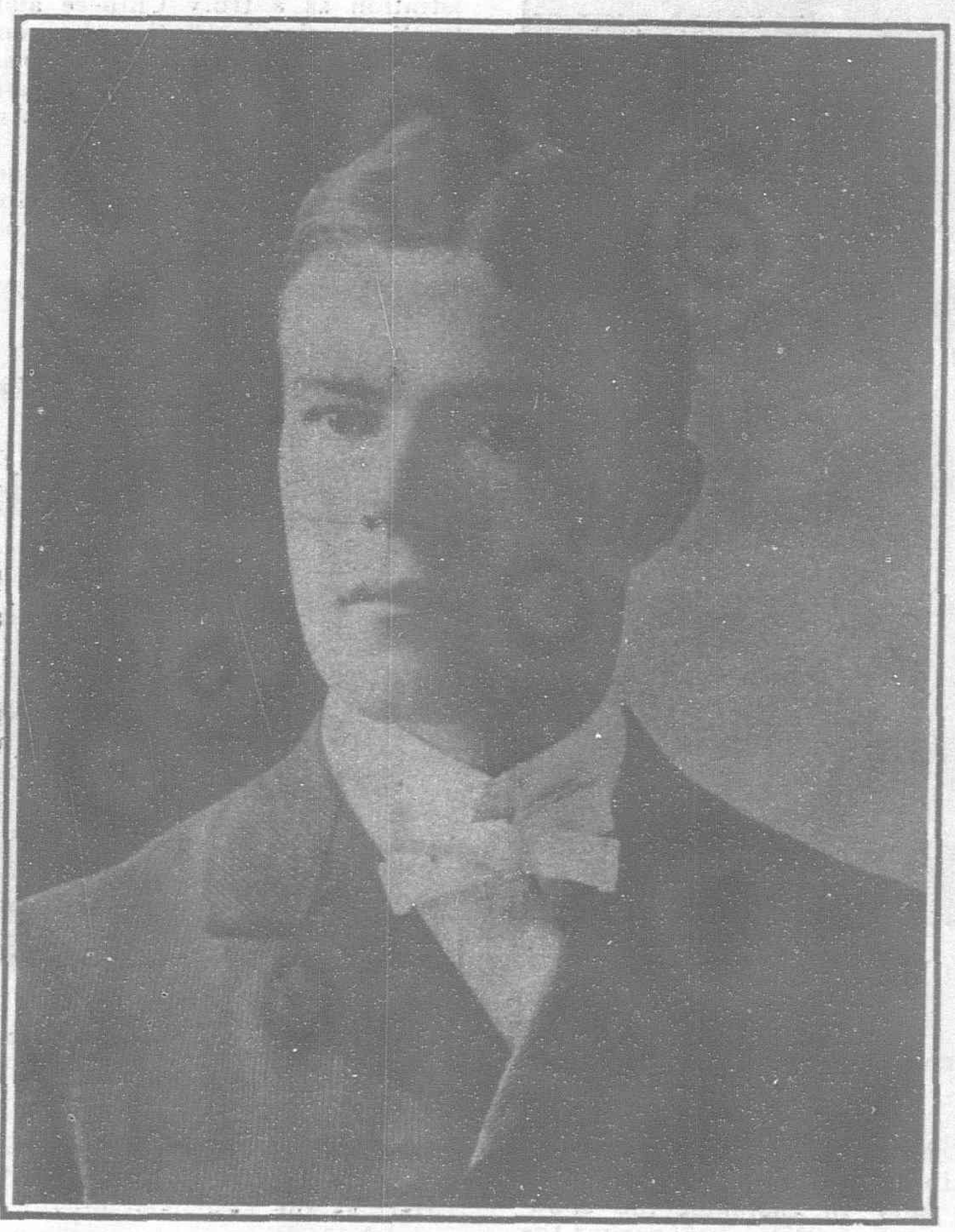
Mr. Claude Kinder, the Engineer-in-Chief of the Imperial Railways of North China, was in a fair way to be appointed Inspector General of China's Railways. Had he adopted a different policy, and admitted the right of the Chinese to a broad share in the management of the line, instead of standing on the hard and fast terms of a loan agreement, there is little doubt that this coveted post, out-rivalling in importance the Inspectorate General of Customs, would have been tendered him. Under his direction the railway standards of the Empire had been designed and adopted, and the way paved for the manufacture of cars and bridges for all Chinese roads, in the shops under his direction.

Mr. Kinder's services to British interests were on a par with, if they did not exceed those rendered by Sir Robert Hart.

AMERICAN FINANCIAL ADVISERS TO THE PERSIAN GOVERNMENT

The appointment of Mr. W. Morgan Shuster as Financial Adviser and Treasurer General to the Persian Government is the first time that an American official has been requested by a continental power to act in that capacity.

The badly tangled condition of Persian finances was the subject of much discussion by several interested European powers and it was practically decided that they would take them over under a joint European commission for the purpose of straightening them out This of course would have involved more or less friction, but it was finally decided that a corps of officials, comprised of the citizens of a country having no financial claims, would best serve the purpose and at the suggestion of the Persian Government, approved by the European bondholders, a request was made to President Taft by Persia for the services of a staff of officials to take charge.



HON. W. MORGAN SHUSTER
FINANCIAL ADVISER AND TREASURER GENERAL TO THE PERSIAN GOVERNMENT

BRUCE L. DICKEY
INSPECTOR OF PERSIA'S PROVINCIAL REVENUE DEPARTMENT

The position was at once offered Mr. W. Morgan Shuster to head this staff in the capacity of Treasurer General. President Taft was no doubt influenced in his selection by his personal knowledge of the man who had served his administration most loyally in the Philippine Islands and whose direction of the important position of the Philippine Bureau of Customs won for him advancement to the portfolio of Secretary of Public Instruction.

Mr. Shuster's first public service was in connection with the Cuban customs service where he served three years and became special deputy collector. In 1901 he was appointed Collector of Customs, Philippine Islands, in which capacity he served for five years. In 1906 he was appointed Secretary of Public Instruction by President Roosevelt upon the recommendation of Secretary of War Taft. In 1909 he resigned from the government service to engage in the practice of law in Washington, D. C. During his official career, he was active in the revision and framing of

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The diplomat was knighted and honors heaped upon him, but the Engineer was retired to private life after a lifetime of service. British manufacturing interests owe a debt of gratitude to Claude Kinder, for his work in their behalf merits some substantial reward in honors.

Other manufacturing nations however have every cause to feel relieved over the failure of Mr. Kinder to secure the coveted post of Inspector General of Railways, for had this occurred it meant the complete standardization of all the lines in the Empire according to British specifications, and the gradual monopolization of the immense field by manufacturers of this nationality.

That this was the ultimate goal of British railway policy in China is revealed in an article from the pen of Mr. J. O. P. Bland, in *The Times* of London last year. Mr. Bland was defending the British Loan agreements in answer to the main editorial of THE FAR EASTERN REVIEW in its issue on Railways in China, and summed up the situation in the following words:—

"It is evident to-day, whatever doubts there may have been on the subject three years ago, that Chinese Government railways cannot be expected to strengthen and benefit the country unless, like the Customs, they are administered under honest and efficient (that is to say under foreign) financial supervision. Given this condition, and a certain inevitable amount of waste in construction need not be too closely regarded."

This statement emanating from one who represented British railway financial interests in China for several years discloses the desire to duplicate the conditions existing in the Customs. On analysis this statement says, in effect, that, like the Customs, as long as British railway loans predominate in China, the Inspector General of Railways must be a British subject.

The full significance and weight of this argument was not lost on the high Chinese officials and foreign diplomats, who immediately saw the danger to China and their respective commercial interests from this avowed trend of British policy.

It is to be regretted that foreign expert knowledge is spurned by China, when she stands so sadly in need of such disinterested advice, and it is to be hoped that she will yet find some way to avail herself of the services of broad minded competent foreigners who will subordinate their national interests to those of the Country they are called upon to serve.

FRANK S. CAIRNS,
DIRECTOR OF TAXATION FOR THE
PERSIAN GOVERNMENT

revenue and tariff laws and his experience in the direction of internal finance makes him a most desirable man for the place.

In proceeding to the selection of his staff, Mr. Shuster chose men from among those closely associated with him in his official career and who are familiar with the work to be undertaken.

Frank S. Cairns of Maine, who will be Director of Taxation, served with Mr. Shuster in Cuba and the Philippines, occupying the posts of special agent, surveyor of the port, deputy collector, and when he received this appointment was serving as collector of customs of Iloilo, the second largest port in the Philippines.

C. I. McCaskey, who has accepted the position of Inspector of Provincial Revenue, is a son of Major General W. S. McCaskey, U. S. A., retired. He entered the Customs Service in Manila in 1899 as inspector and was promoted to the position of deputy surveyor in 1907, but owing to illness of his wife retired from the Philippine service and accepted the position of inspector of customs at the port of New York. In 1909 he was promoted to the position of acting deputy surveyor of New York, which position he gave up to accept his present commission.

Bruce L. Dickey, who will serve the Persian Government as Inspector of Taxation, was appointed inspector of customs at Manila in 1901. He was promoted through the various grades to the post of chief of the passenger and baggage division and later in 1906 was appointed cashier which position he held until 1909, when he resigned to return to the United States.

C. J. Hills, who goes to Persia in the capacity of Expert Accountant, is a native of Cleveland but has been resident in Washington since childhood. He is a graduate of the Columbian University, where he took a law course. He was employed by a bonding company of New York and later entered the office of the solicitor of the Department of Commerce and Labor to resign a year later to engage in private and departmental practice of law. He held the office of examiner of building and loan companies for the United States Treasury and his wide experience in the supervision of accounts makes him a most desirable addition to Mr. Shuster's Staff.

THE U. S. COMMERCIAL AGENT TO THE ORIENT

The recognition by Secretary Nagel of the U. S. Department of Commerce and Labor of the growing interest among American manufacturers in the development of Far Eastern trade, was emphasized recently by the appointment of Lovett M. Wood, editor of the *Seattle Trade Register*, to the position of Commercial Agent to the Orient, under the Bureau of Manufacturers. Mr. Wood has been a resident of Seattle for over 22 years and during that time has watched the growth of Seattle trade with the Orient and familiarized himself with conditions, so that he is sufficiently informed as to the attitude of Western manufacturers toward Oriental trade development, to make his active interest in his present position very valuable. Before leaving for the Far East in March Mr. Wood made it a point to meet the representative commercial bodies of the Pacific Coast interested in promoting better trade relations and was assured of their active interest and support in his work.

YELLOW JOURNALISM A MENACE

The glaring sensationalism of the yellow press that devotes its space to the magnification of crime by lurid details, so nauseating to the healthy section of any community, is receiving some attention from commercial quarters that may serve to check its evil influence. Mr. Edward A. Abbott in the Southern Furniture Journal calls attention to a recent pessimistic attitude on the part of the trade press in which they invariably charge that "Unreasoning fear and unwarranted apprehension is what ails business," but Mr. Abbott declares it is largely due to the distressing influence of the Yellow Press upon the minds of the people.

He relates in illustration of how the yellow terror is spreading mental depression by the story of an old negro woman whose efficiency was reduced by the distressed condition of mind following the reading of details of an unhappy crime.

He writes:

"The woman is several times a grandmother and has been in my employ fifteen years. She can read, write and count, and is faithful and efficient in her humble place. One day when she was counting some dishes for me, I noticed her usual accuracy was lacking. On being asked the cause, she said, 'Mr. Abbott, I'm all broken up.' Then, with tears wetting her wrinkled face, she told me she had read in the morning paper about a 'white man up in Illinois' who, whisky crazed, had stamped his little baby to death.

"If so humble a worker is, by this cruel publication, so distressed that she cannot count cups and saucers and plates, what must be its effect on her employer, higher up in the scale of intelligence and responsibility"

He continues:

"If we read our morning paper, we go to our stores and factories with minds shocked by the doings of criminals, soiled by the vulgarities of the divorce courts and filled with fear and apprehension by double-headed stories of defaulting cashiers, unfaithful employees and no end of other commercial iniquities. At night we are disturbed by the terrors of the day that we have read about in the evening paper, that follows us to our homes with stories even more yellow and more shocking than those that went out with us in the morning."

For a solution he offers:

"Without hope of help from those in high places, in church and society, I propose to take the case to the advertiser who, in buying space, is paying the press to hinder his business and delay the return of those good times we are all looking for.

"I shall ask the trade journals of the whole country to furnish the publicity and help to convince the storekeepers and manufacturers that murder and suicide, larceny and divorce, disease and death are not good companions for their advertisements. Together we will show those who have things to sell the wisdom of cultivating a clientage that is optimistic, joyous and clean minded—not one that is fearful, saddened and vulgar.

"We shall ask the advertisers to put the knife in the Yellows' and Muck-rakers' most vulnerable spot—the cash register. We shall not ask in vain. This is my prescription for the 'unreasoning fear and unwarranted apprehension' that is hurting business."

Mr. Abbott might have gone further and directed attention to the crowning crime of this same yellow press that, not satisfied with filling the local mind with the horrors of which he writes, spreads it misinformation and sensational interpretation of international questions in a manner to inflame the lay mind, stir up race prejudice, and make trouble between neighboring nations. Of such we have had a surfeit. We not only endorse Mr. Abbott's campaign but would go further and urge a ban upon the literature that is jeopardizing foreign relations, and injuring foreign trade. The publication that would viciously inflame the citizens of one nation against those of another, is a serious menace to any country and patriotic advertisers everywhere should find it their duty to serve this class of Yellow Journal with the same rigorous discipline as they would mete out to the local member of the same lurid press. And the counting room is a very valuerable objective.

IMPERIAL KIRIN-CHANGCHUN RAILWAY

The Kirin-Changchun Railway, which, when completed, will traverse one of the most prosperous sections of Manchuria, is approximately 85 miles in length according to survey and last month 35 miles were opened to construction train traffic connecting Changchun with Yingchengtsu, while construction is well along on the Kirin end.

In December last year the announcement was made that the line would be opened for passenger and freight traffic from Changchun to Coran by construction trains a distance of about 15 miles. The inauguration of the section was celebrated at Changchun on December 5, 1910, by a general reception. The local authorities, gentry, and Japanese and Russian officials, with a number of foreign prominent merchants in Southern Manchuria were invited to be present. Tea and refreshments were served by the staff of the Railway. Addresses were given by the Director-General and the Engineer-in Chief.

from Kirin, the work has been also nearly done. As all the materials have already been o tained, we are hoping that by the first two months of next year the rails will be laid as far as to Tumenling through Yihmah-ho, but at present, only a short section of 50 li (16 miles) between here and Kalunkah has been completed. So that by the first day of next Moon (January 1911) the construction trains will begin to run and at the same time we hope we will be able to provide accommodation for the passengers and to carry cargoes in the same trains.

"I am sorry that you are greatly disappointed today by coming over here to see such incomplete work as the stations. Cars and other facilities have not yet been put into good working order.

"On behalf of the staff of the railway, I, as a Director-General wish to drink your health and thank you heartily for your kind-

that the result of having the whole line of embankment built up, and the construction trains begun to run as far as Kalunkah is due to both the diligence of the Director-General and the faithfulness of the whole staff.

"*IV—Chinese and foreign interests.*

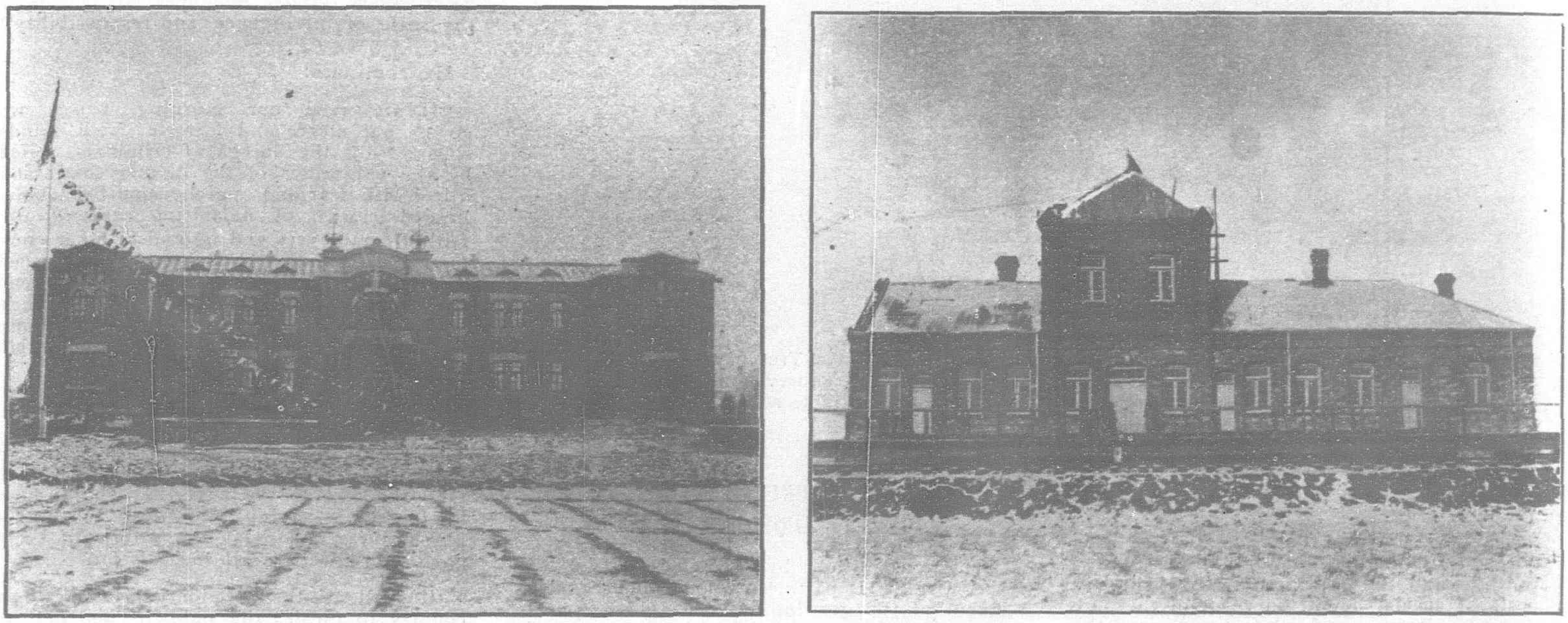
"I also wish to say that the success of this undertaking is not only dependent upon the hard work of the staff but also of the help of well-wishers of different foreign countries. With this in view I wish to thank you for your kindness before the large audience of our guests.

"*V—Good feeling from the Southern Manchurian Railway Society.*

"I also wish to thank the Southern Manchurian Railway Society for its sincere sympathy with our work.

"*VI—The future hope.*

"I hope that we will do our utmost in bringing about the completion of this rail-



IMPERIAL KIRIN-CHNGCHUN RAILWAY

ADMINISTRATION BUILDING AND STATION AT CHANGCHUN

A FIRST CLASS STATION

The Director-General said:—"Gentlemen—I am very glad to express my pleasure in having you with us today to witness the opening ceremony of running trains of the Kirin Changchun Railway in spite of it being such an extremely cold day. I also wish to express my sincere gratitude to you for your favors often shown me since I was appointed by the Board of Communications in the 10th Moon (December 1909) of last year to take over the directorship of this administration.

"Now let me submit you a brief report on our work here. During the 11th Moon (January 1910) of last year, our Engineer-in-Chief and I made a careful survey for this line when there was tremendously heavy snow about several feet deep, which caused a great deal of trouble to our work. But in the following month we got our staff to continue the measurement in spite of the hindrance of snow and ice on our way. But the 4th Moon (May 1910) of this year as soon as the snow and ice were melting away we began to have the embankment built without delay. But owing to the continuous rains in the last three months (viz. the 6th, 7th, and 8th Moon of this year) the work was greatly interrupted. Fortunately through the efforts and diligence of every member of the whole staff, the section of the embankment from Changchun to Tumenling, about 140 li long (44 miles), has just been completed. As to the other section of the embankment about 120 li (40 miles) long ness in being present." The Engineer-in-Chief (a Japanese gentleman) said:—

"*I—The result of general work.*

"I have nothing to say except a short report on the work which has been trusted in my charge. The distance of the main line from here Kalunkah is 13 miles and from Toutaoleo, 15 miles. The highest part of the embankment is 26 feet and the deepest part of the trenches is 16 feet. As to the construction of the turn-outs, switches, etc., all is built satisfactorily. Now I wish to tell you that the importance of the construction is to have the road built as soon as possible for the convenience of conveying the materials for the building purpose, then the work will be easily carried on with more success. At the present time, the stations and other buildings have not yet been put up in good shape as you have already witnessed.

"*II—The diligence of the Director-General.*

"On the 2nd day of the 12th Moon of last year when the weather was much colder than it is now, the Director although he was then very ill, went with me to survey the line of this road in spite of the heavy snow on the way. Now I am sure the success of the contruction is insured by his hard work which I believe is appreciated by you all.

"*III—The faithfulness of the staff*

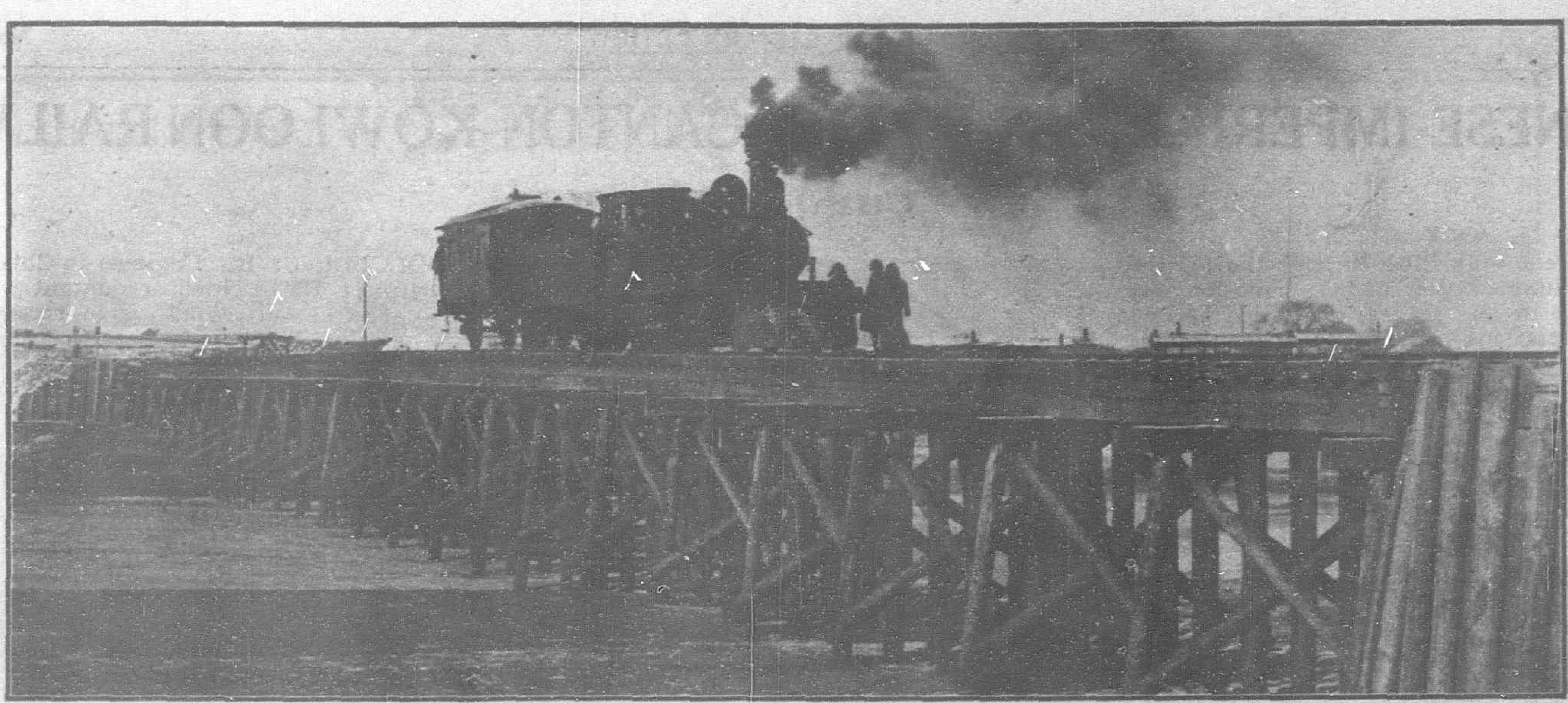
"As the Director-General has been so diligent all the time, the whole staff are also willing to work hard. Now I am very glad to say way as soon as possible and that you will continue to do us favours as you have ever done before."

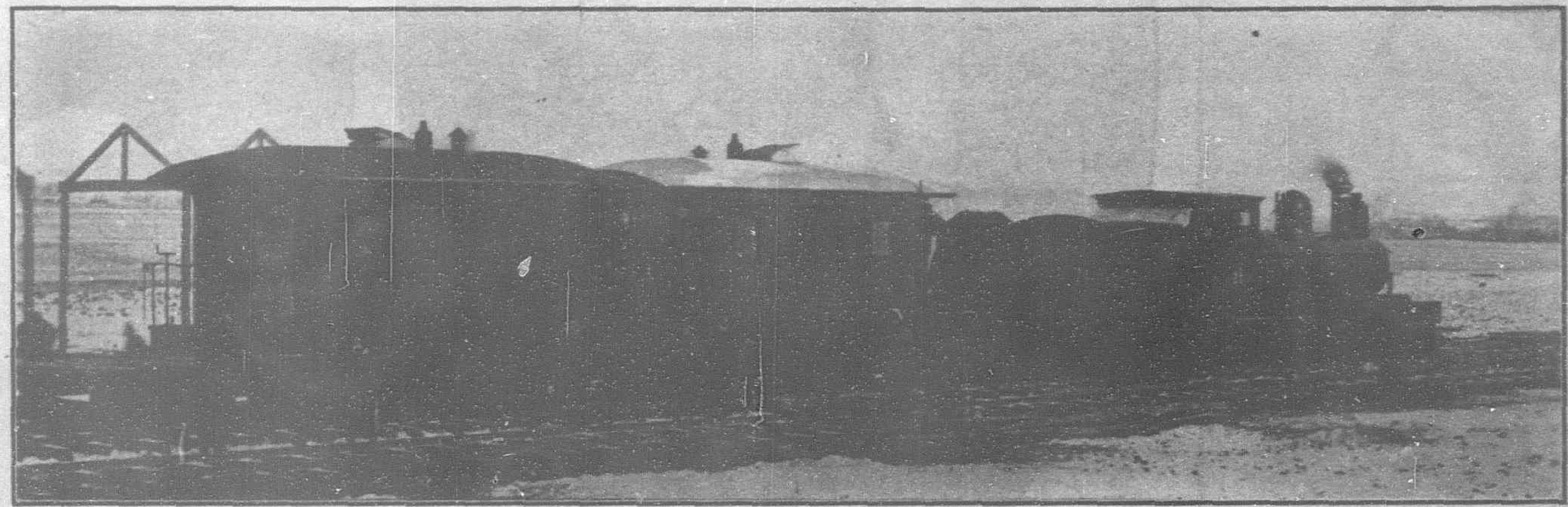
The first locomotive put in commission on this line was built in the shops of the Imperial Railways of North China. The Hanyang Iron Works have the contract for supplying all the rails. The most difficult engineering work on the line has reference to two large bridges and one tunnel, upon which work is progressing most favorably. Indeed, great activity has featured this railway construction throughout there being no suspension of work during the winter months. The bridges will all be of steel or reinforced concrete with the exception of temporary structures where large permanent bridges are being built so as to expedite the opening of general traffic.

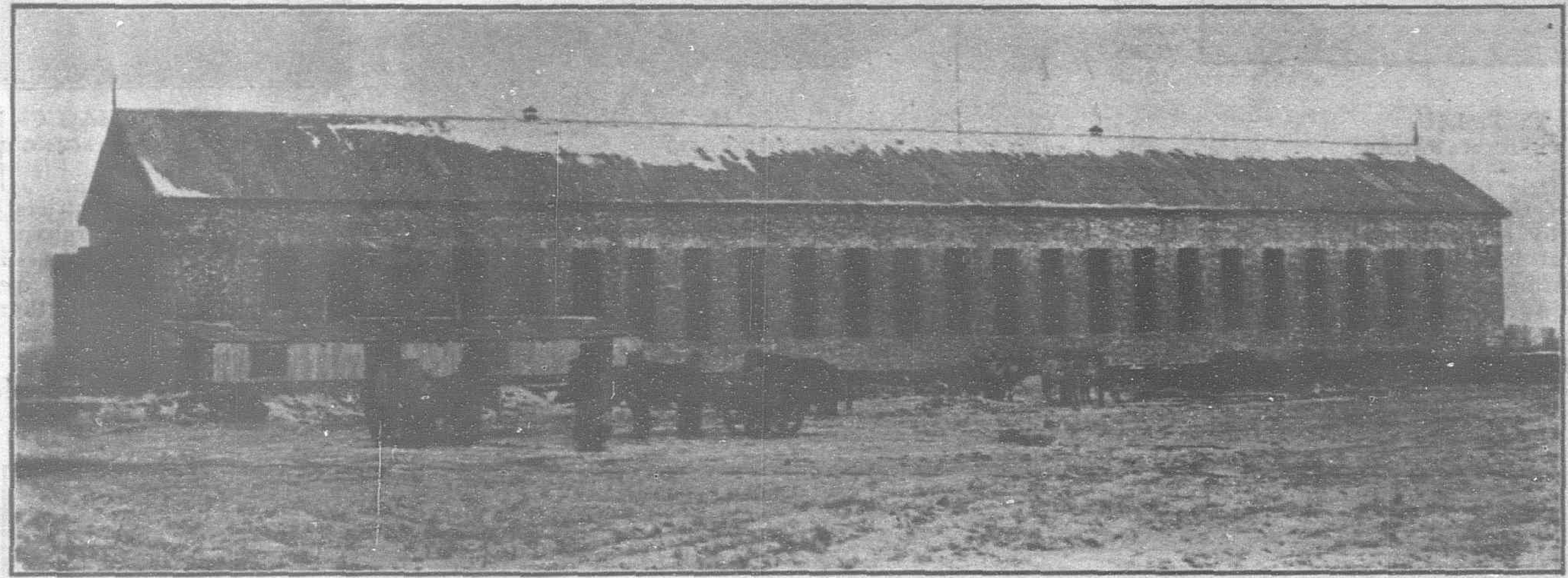
It is expected that the line will be completed by November this year.

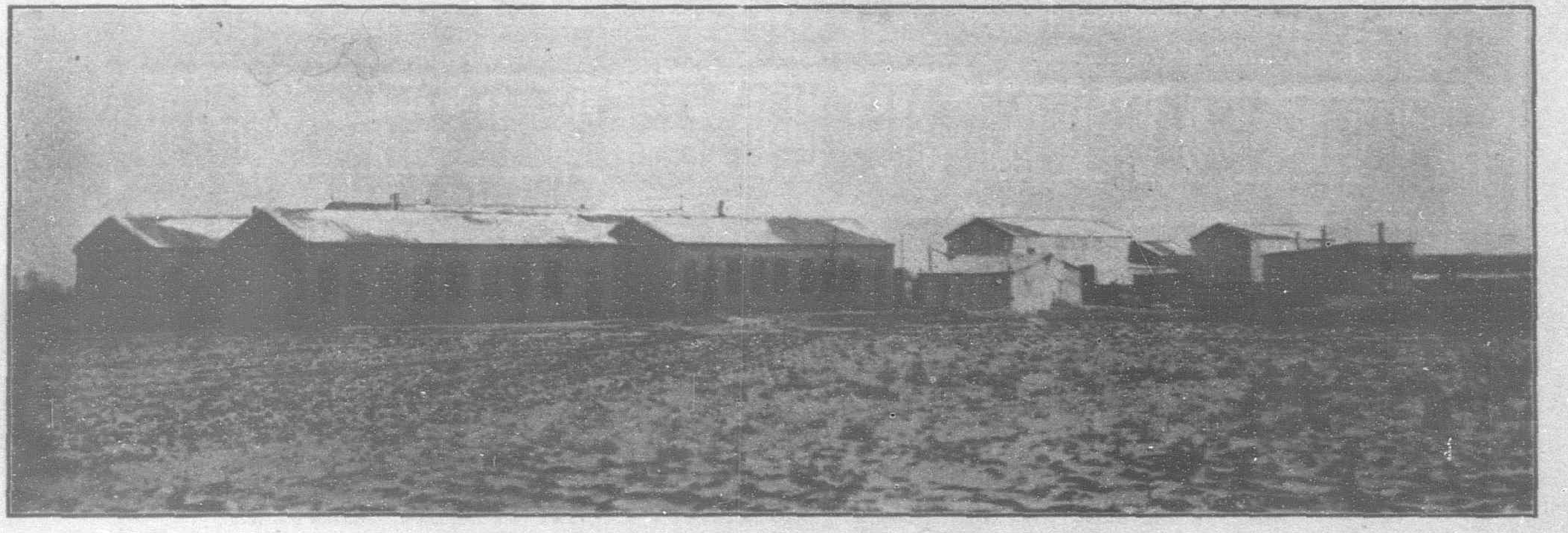
The Kirin Changchun Railway is financed by Japanese and Chinese capital. Under an agreement entered into between the South Manchuria Railway and the Chinese authorities the former agreed in August, 1909, to loan the latter half the capital necessary to construct the line. The total capital required was estimated at Tls 4,300,000 of which half was paid over to the Kirin-Changchun Company in September, 1909. The Yokohama Specie Bank was named repository for the funds of the railway. The loan bears interest at the rate of 5%.

The agreement provided that the Engineer-in-chief and the Chief Accountant should be Japanese, that the agreement should continue in force for 25 years and the railway be operated by Chinese and Japanese jointly.









VIEWS OF THE KIRIN-CHANGCHUN RAILWAY

TEMPORARY WOODEN TRESTLE AT CHANGCHUN. CONSTRUCTION TRAIN. LOCOMOTIVE SHED AT CHANGCHUN. STOREHOUSES AT CHANGCHUN

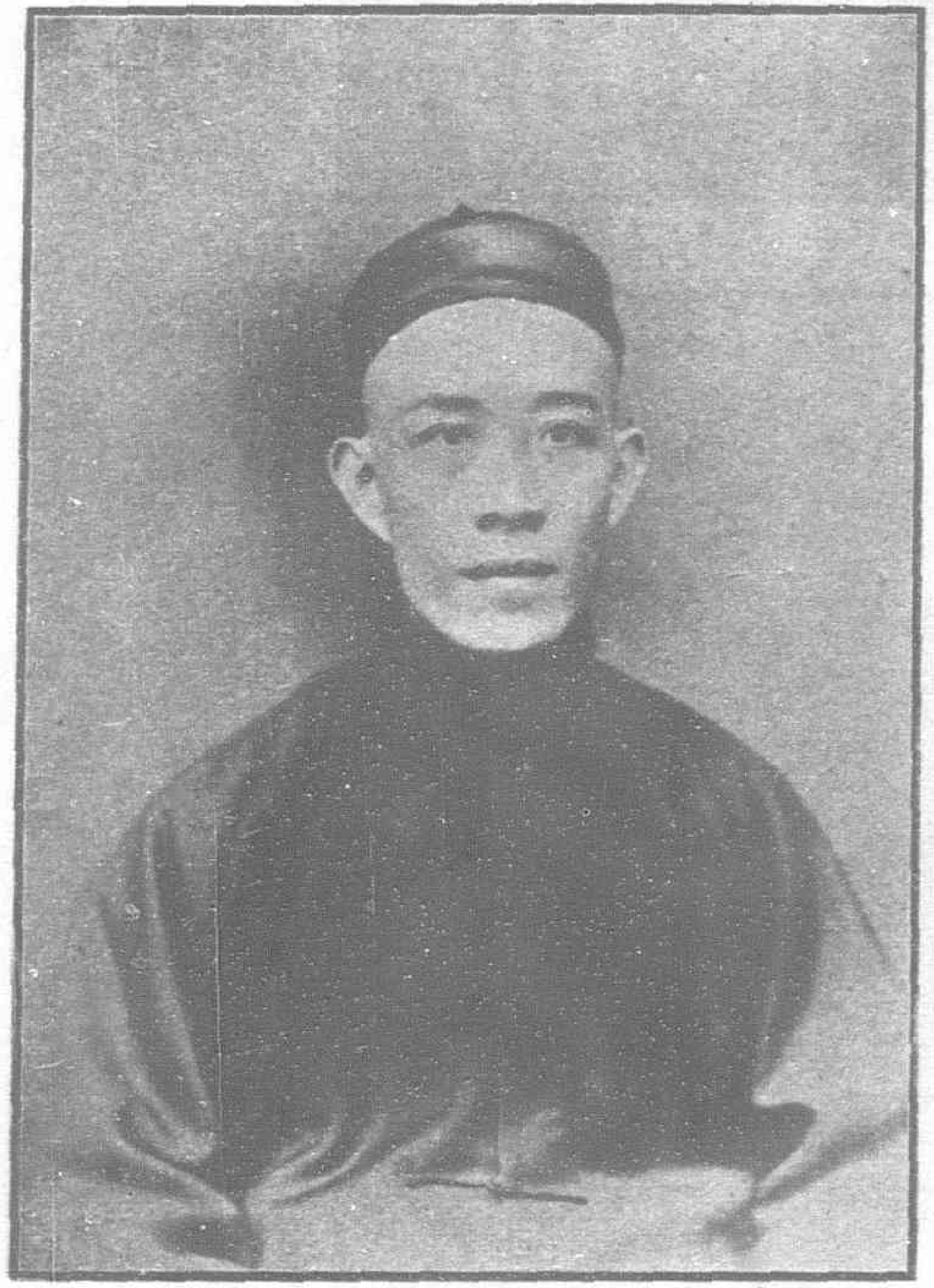
The locomotives and cars for this line were built at the Tangshan Shops of the Imperial Railways of North China

CHINESE IMPERIAL RAILWAYS.--CANTON-KOWLOON RAILWAY

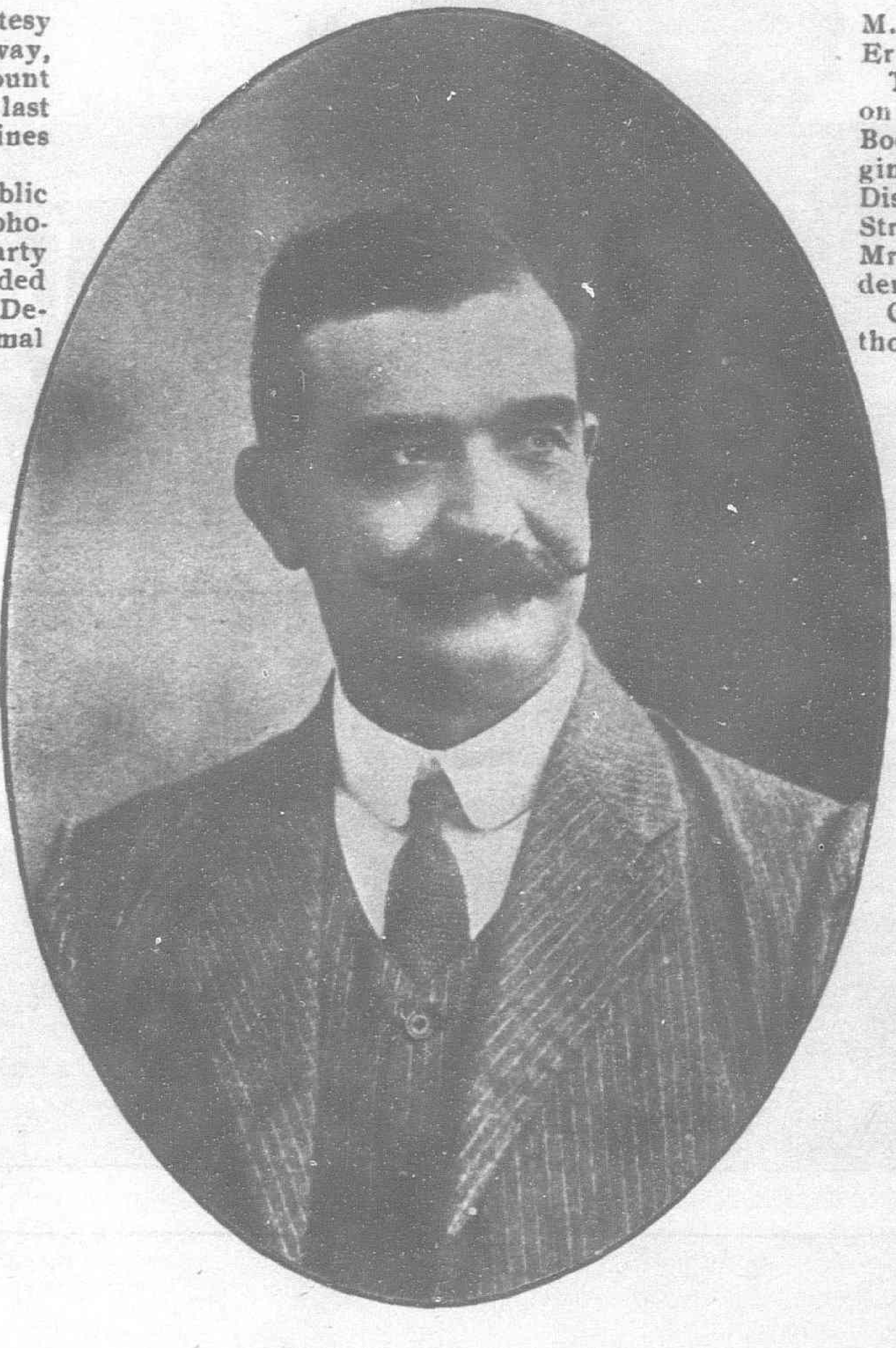
THE CHINESE SECTION

We are now enabled, through the courtesy of the Administration of the above Railway, to present to our readers a detailed account with illustrations of this, one of the last railways, to join the revenue earning lines of China.

A section of 29 miles was opened to public traffic on December 6th, 1910, and the photographs show the ceremonial train and party of Chinese and foreigners which proceeded to Tong Mei (Mile 24) from Canton on December 5th, the occasion being the formal opening of this section by His Excellency The Viceroy of the Kwang Tung provinces.



C. T. LIU,
TRAFFIC MANAGER



FRANK GROVE, M. I. C. E.
ENGINEER-IN-CHIEF

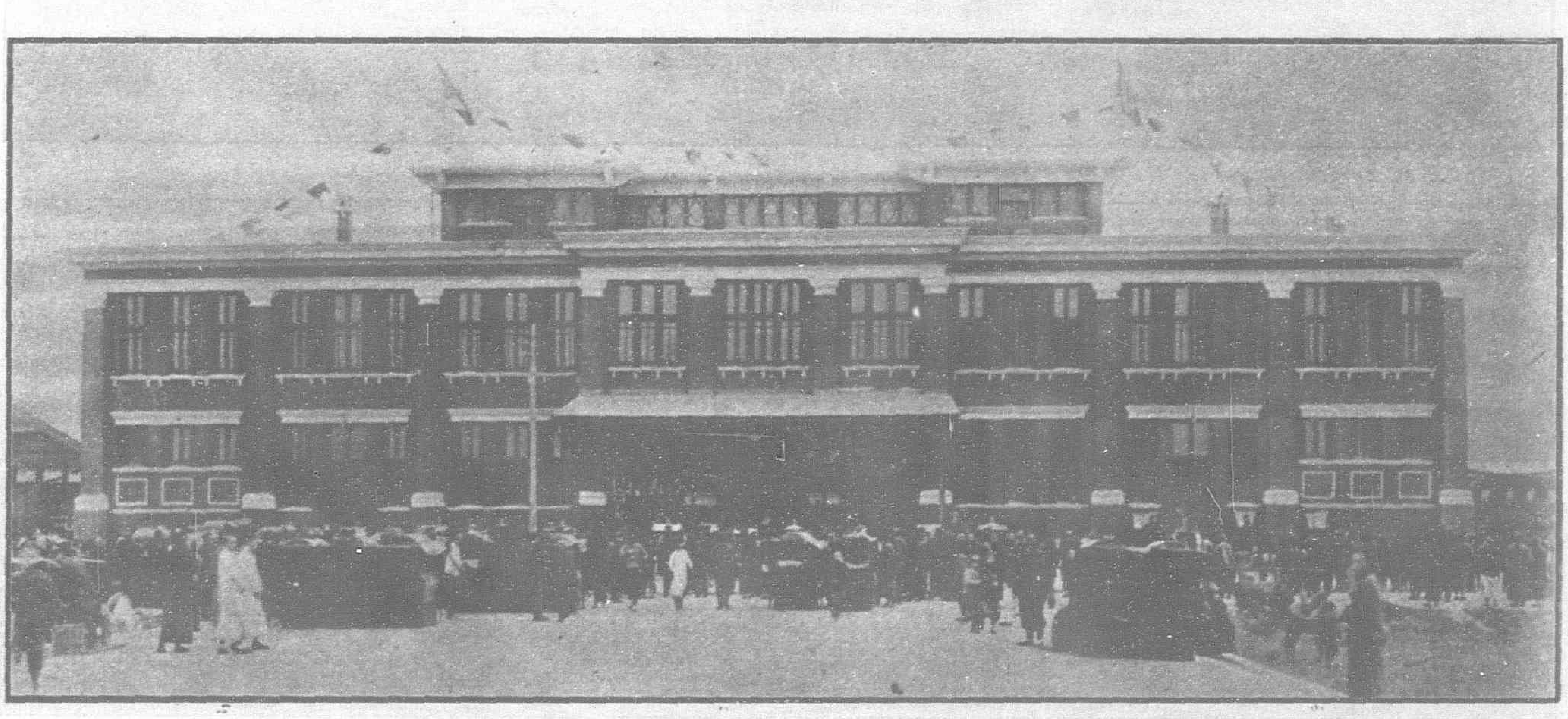
TAOTAI CHAO CHING-HUA
ACTING MANAGING DIRECTOR

The total length of the Chinese Section of the Canton-Kowloon Railway is 89½ miles; the Loan Agreement for its construction was signed in March 1907 by the British & Chinese Corporation and the Imperial Chinese Authorities; the detailed survey was commenced in August of that year, while construction was commenced in certain sections where land had been purchased, in June of 1908.

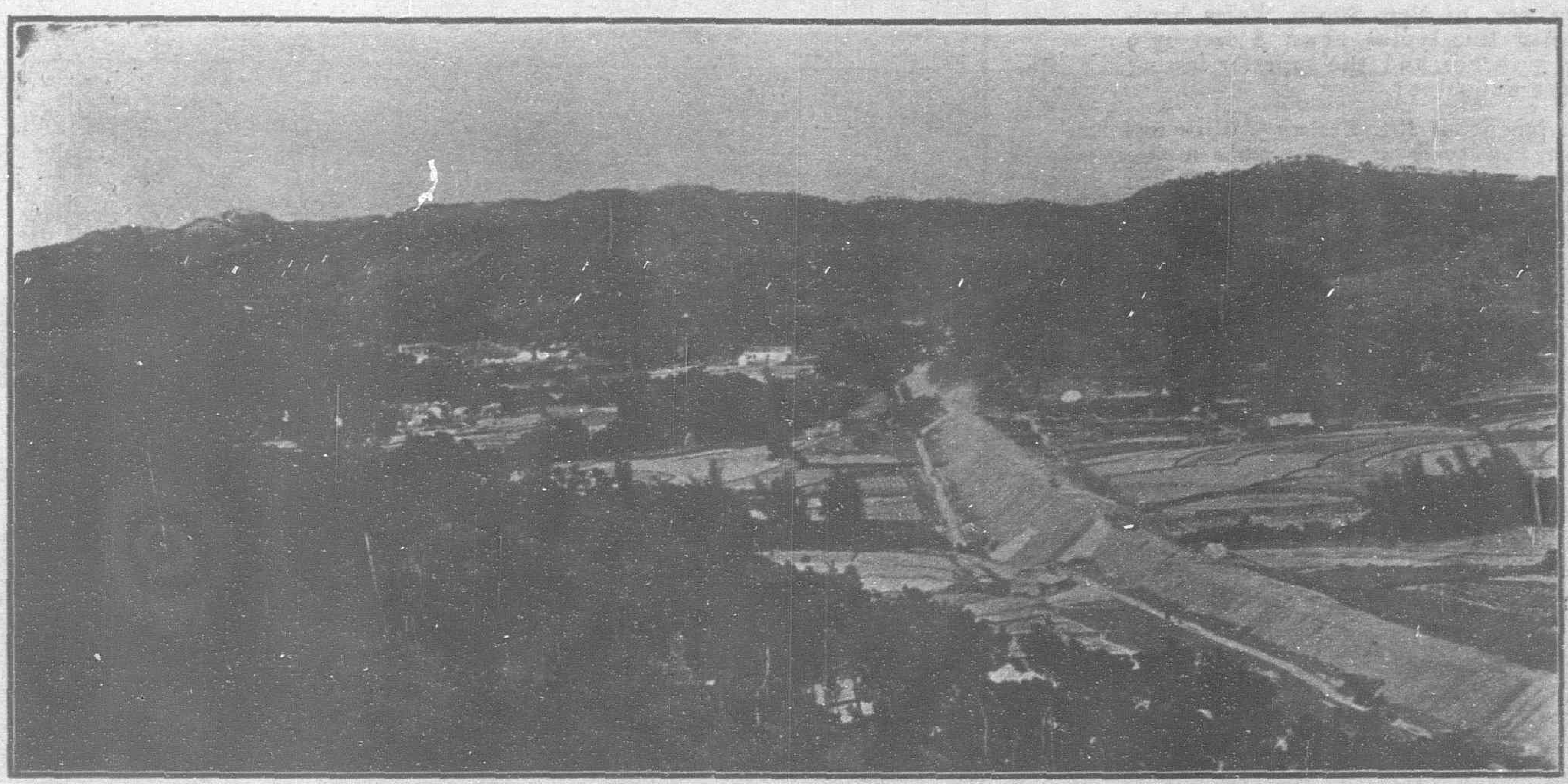
The local administration of the railway is placed by the Loan Agreement in the hands of a Chinese Managing Director associated with a British Engineer-in-Chief and a Chief Accountant, and these positions are at the present time filled by Mr. Chao Ching Hua, Acting Managing Director, Mr. Frank Grove, M. Inst. C. E., Engineer-in-Chief, and Mr. Ernest Hall, Chief Accountant.

The executive officers at present engaged on the line are as follows: Mr. B. T. B. Boothby, Assoc. M. Inst. C. E., District Engineer, No. 2 District; Mr. W. G. Moore, District Engineer, No. 3 District; Mr. W. M. Stratton, Maintenance Engineer, Tai Sha Tou; Mr. J. J. Thompson, Locomotive Superintendent, and Mr. C. T. Liu, Traffic Manager.

Construction work has proceeded steadily, though many troubles caused by native opposition in the country districts occurred in the early days of land purchase and of the commencement of actual works. Eventually, however, with more vigorous measures on the part of the Chinese authorities, and much patience and care on the part of the foreign engineers, a better time came and more rapid progress was attained, especially in the past year.



CANTON-KOWLOON RAILWAY.—TAI SHA TOU (CANTON) STATION



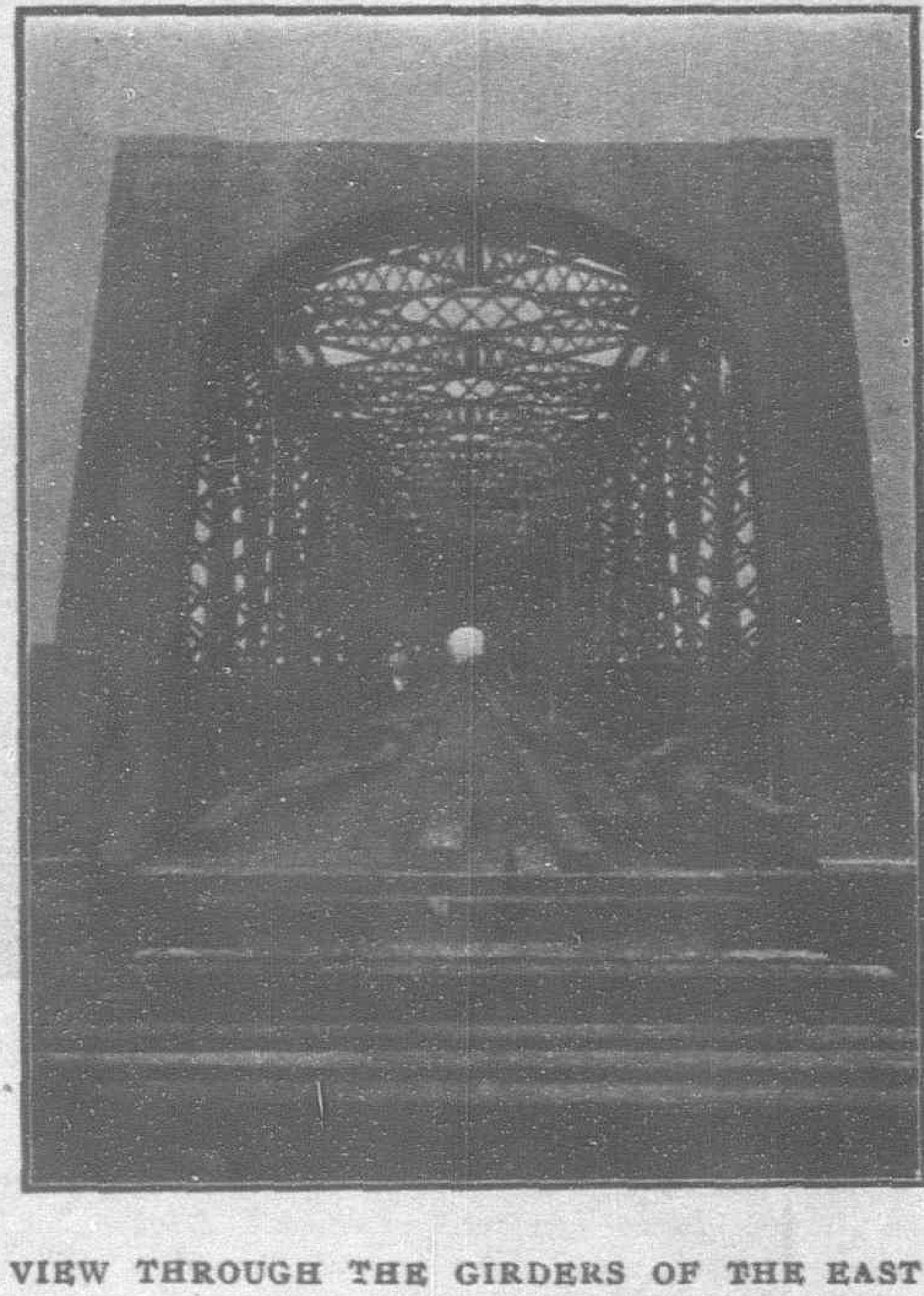
MILE 83, LOOKING NORTH, CANTON-KOWLOON RAILWAY.

While this Railway does not rank as China's most difficult engineering work up to the present, there are works of magnitude and some considerable engineering interest.

In the early days of promotion of the scheme, a length of 100 miles, more or less, was anticipated and that this could be reduced to 89¼ miles is satisfactory. Tunnels have been avoided though there are heavy earthworks from Mile 58 to Mile 85 through hilly and mountainous country, and in the lowlying portions there are some 10 miles of high embankment necessitated by the very high flood levels.

Besides an interesting route through the hilly portions, already indicated, the feature of this railway which calls for special comment is a series of large bridges in the East River Valley which is crossed between Mile 32 and Mile 41. In these nine miles, the following bridges have already been, or will very shortly be, completed, and we are enabled to give photographs of some of these interesting works.

Sien Tsun River Bridge		5 spans 60 feet Skew.
Shek Ha	do.	3 spans 60 feet.
Shek Tan	do.	3 spans 100 feet, 2, 60 feet.
Pek Kong	do.	4 spans 60 feet.
Kan Sui	do.	3 spans 100 feet.
Sheklung, East	do.	3 spans 224 feet, 2, 60 feet.
Tung Kun	do.	4 spans 224 feet, 2, 60 feet.



VIEW THROUGH THE GIRDERS OF THE EAST RIVER BRIDGE ON THE CANTON-KOWLOON RY.

The method adopted for the erection of the 224 feet span girders is unusual in this part of the world and indeed has been elsewhere seldom attempted on so large a scale. Five spans have already been floated out at bed stone level on pontoons specially built with deck staging for the purpose. The weight of each span when floated out is 330 tons and the erection and riveting has taken place on shore near launching jetties. The final floating out and seating of each span only occupies a few hours. The piers of the larger bridges are founded upon caissons encased as to the lower portion in steel, sunk to a sufficient depth by open dredging and finally plugged with concrete.

The ruling grade of the line is 1 in 150 and this grade is almost entirely confined to the hill section, which remark also applies to the sharpest curvature, viz: 3 degrees.

Tangents are long throughout the more level portions of line and therefore a satisfactory through train speed should be maintained without difficulty.

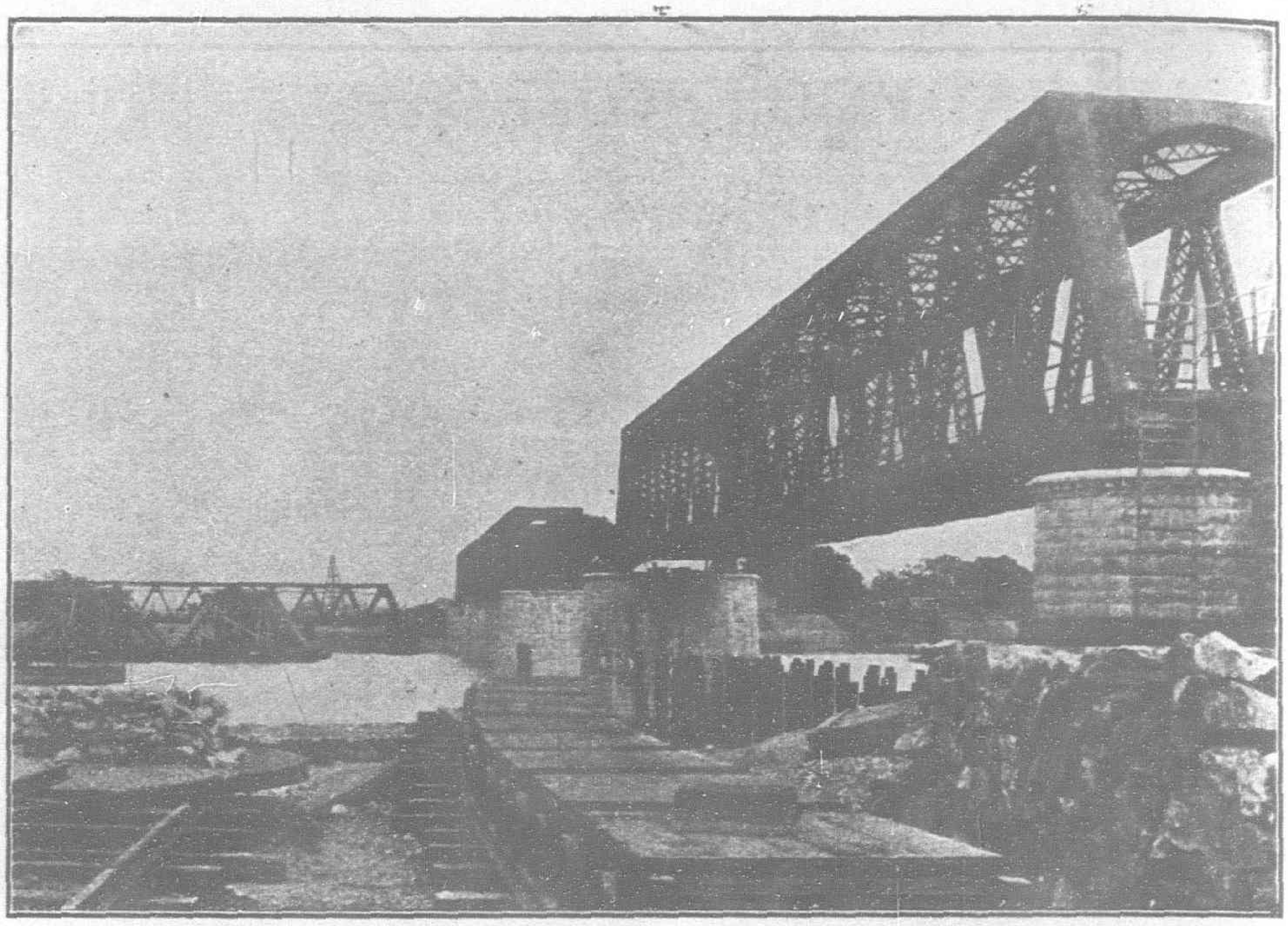
Steel Rails 85 lbs per yard have been supplied by the Hanyang Iron & Steel Works, Hanyang, near Hankow, also fastenings with the exception of fish bolts, and the quality, as proved by analysis and physical tests, is up to a high standard.

THE OPENING TRAIN AT TAI SHA TOU STATION (CANTON) ON THE CHINESE SECTION

Sleepers are of New South Wales hardwoods mostly Eucalyptus, hewn, 8 feet by 9 inches by 5 inches, and the superior lasting qualities are undoubted.

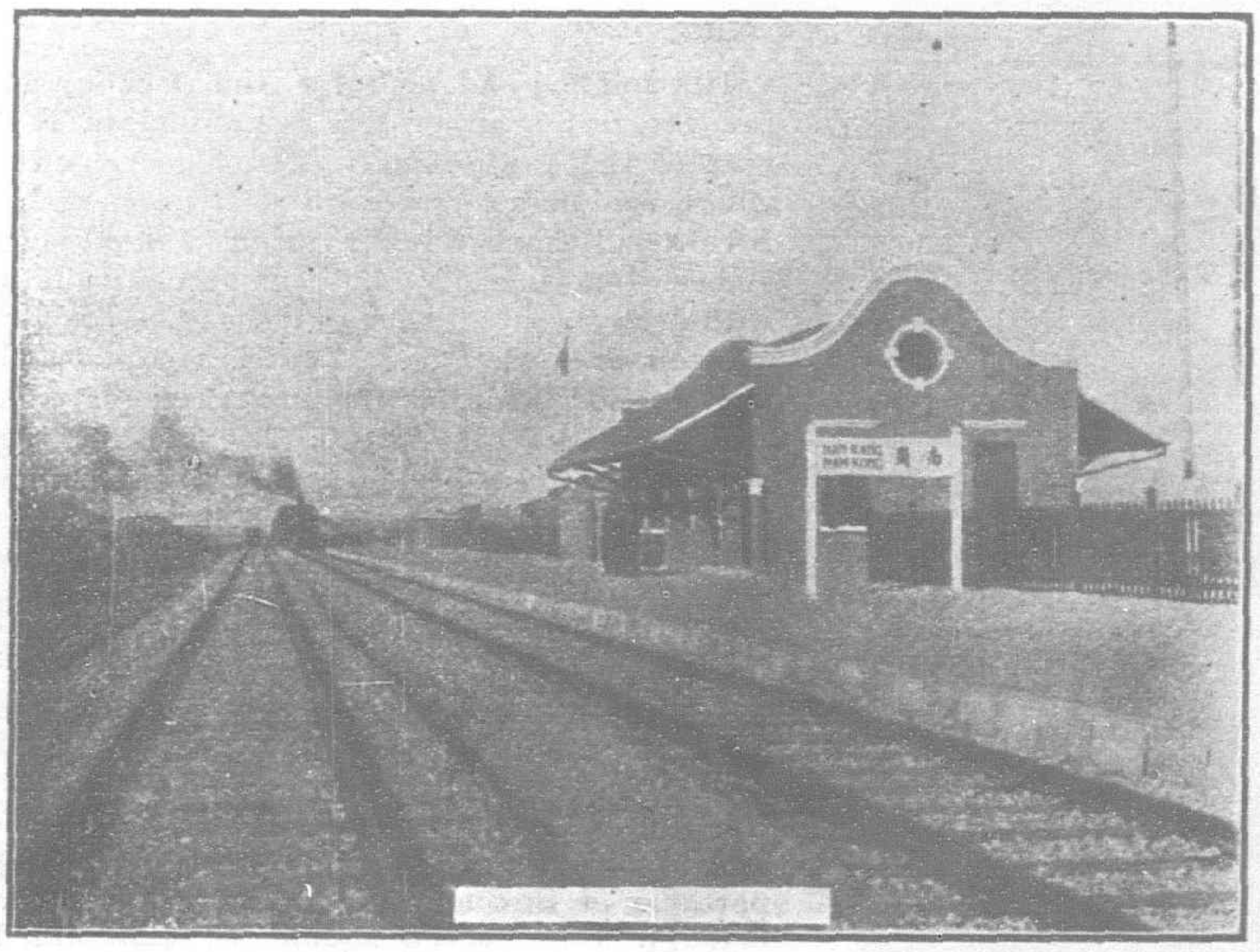
The equipment of the Railway, while not extravagant, is such as will ensure a fair degree of comfort to passengers, and the railway has already been complimented on the smooth running of its trains.

The type of locomotive at present adopted is 2-6-0, outside cylinders 19"×24" stroke, double bogie tender for 3500 gallons of water and 5½ tons of coal, weight of engine and tender loaded 101½ tons, maximum axle load 16½ tons, diameter of driving wheels 5 feet, manufacturers, the North British Locomotive Company Limited, Glasgow.

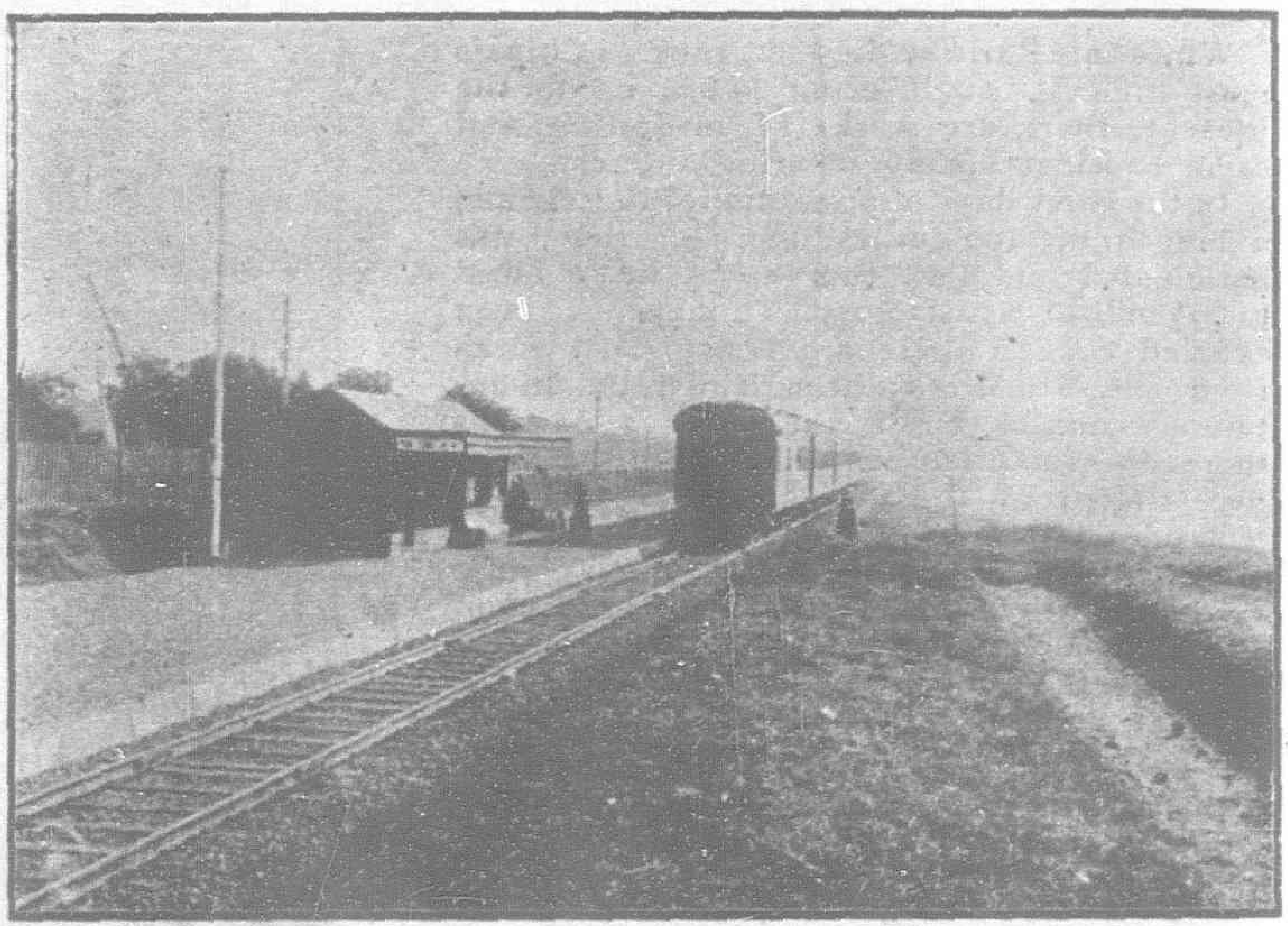


THE TUNG KUN RIVER BRIDGE, CANTON-KOWLOON RAILWAY.

Eight carriages at present in use were supplied as to frames and bogies by the Metropolitan Carriage & Wagon Company, Birmingham, the bodies being manufactured and erected by the Hongkong & Whampoa Dock Co., Ltd., of Hongkong who sent up the carriages to Canton ready for running by lighter towed by a launch. Twenty-three similar carriages are under contract with the Tong Shan Works of the Imperial Railways of North China. The type of carriage adopted is as follows:—length over platforms 61 feet, 4 wheel bogies, body of teak with varnished teak lagging outside and light wood inside, high dome roof with torpedo ventilators. The trains are continuous with standard central couplers and Westinghouse Brake throughout. The first class carriages have a side corridor with coupés and a card saloon, rattan seats and cushions and electric light equipment. For sound design and workmanship combined with reasonable economy, the type of carriages adopted, which has also been introduced on the British Section of the railway, is considered eminently satisfactory.



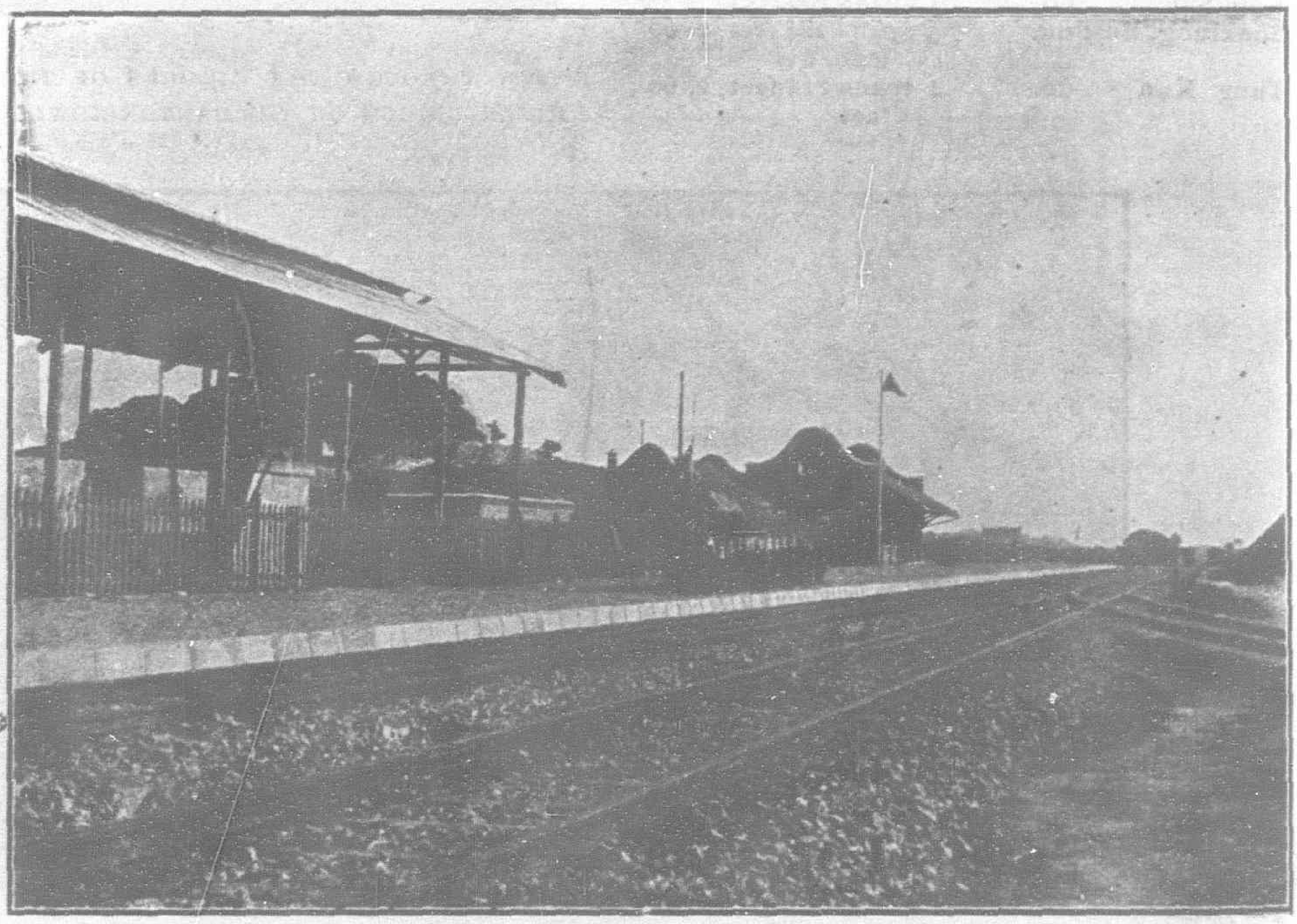
CANTON-KOWLOON RAILWAY.—NAM KONG, 3RD CLASS STATION



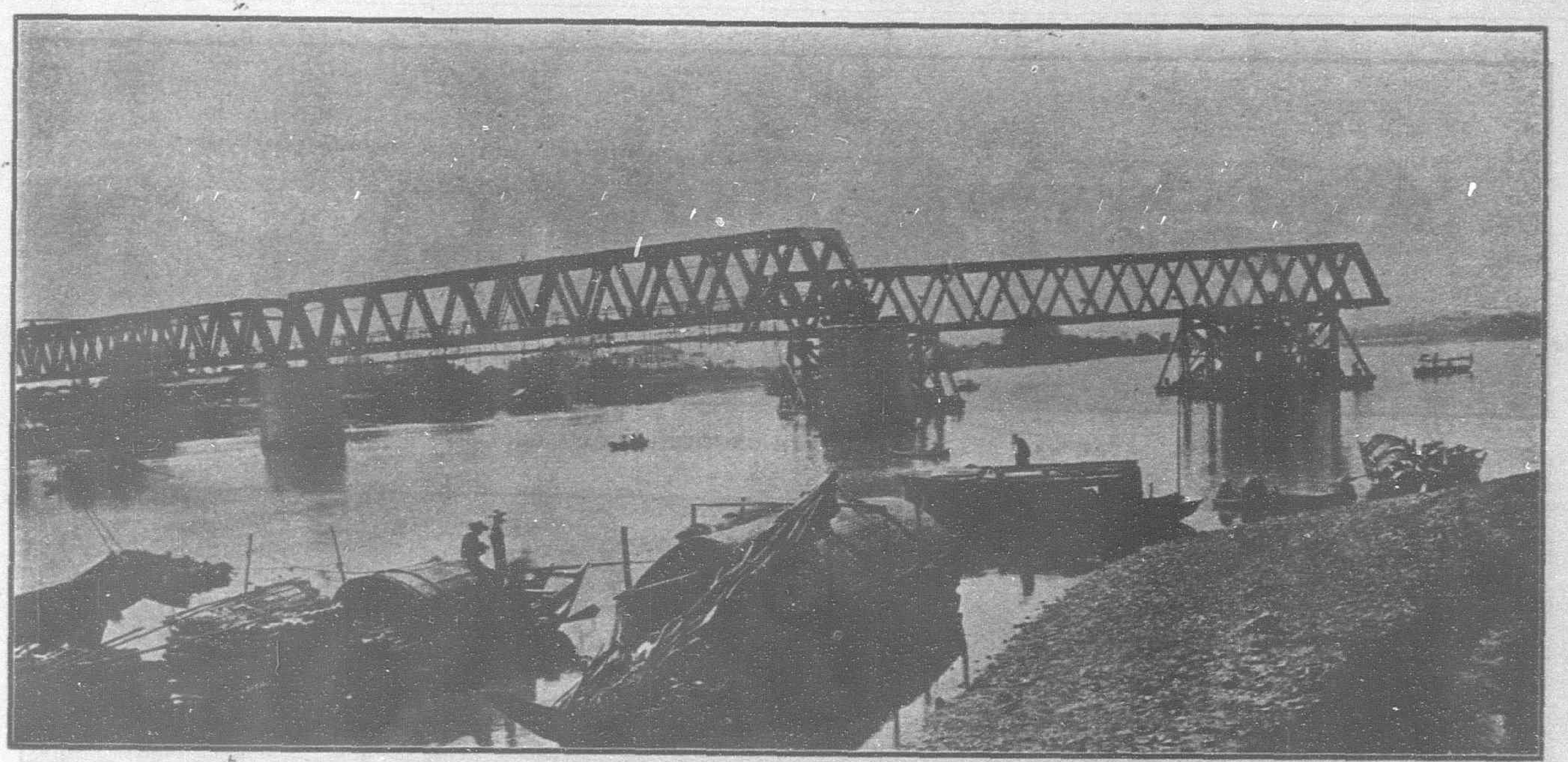
SUN TONG HALT ON THE CANTON-KOWLOON RAILWAY.

The terminal station at Tai Sha Tou, Canton, as the illustration indicates, is now completed and in use as a general head office, as well as providing station accommodation. The smaller stations on the line are simple structures sufficient to serve local demands, while permitting extension and development with the growth of traffic.

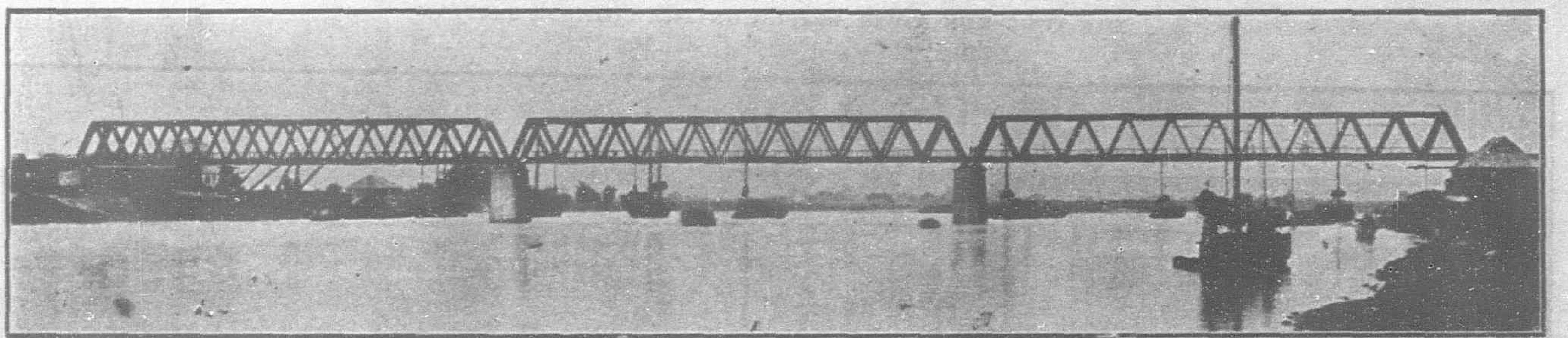
With the exception of Sheklung on the East River, which is a distributing center of some considerable importance, though not a large city, there are no towns of importance contiguous to the railway. There are however many villages and a large population, and the rapid and cheap means of transport afforded by the open section of the line is already hailed with much gratification by the inhabitants.



CANTON-KOWLOON RAILWAY.—SIEN TSUN, 3RD CLASS STATION



THE EAST RIVER BRIDGE: LAUNCHING A 224-FOOT SPAN, CANTON-KOWLOON RAILWAY



THE EAST RIVER BRIDGE ON THE CANTON-KOWLOON RAILWAY

In order, therefore, to develop a maximum amount of local traffic, besides 3rd class stations, semi-permanent "halts" have been established at all likely places, which, with a small station staff, should materially assist in building up the traffic of the railway.

The date of opening to through traffic with Hongkong is given as probably some time in August of this year and unless some untoward incident occurs, there appears every indication that this estimate is not over optimistic, for little remains to be done but completion of track laying, ballasting and some station buildings and yards, also the delivery and erection of further rolling stock to meet the needs of traffic.

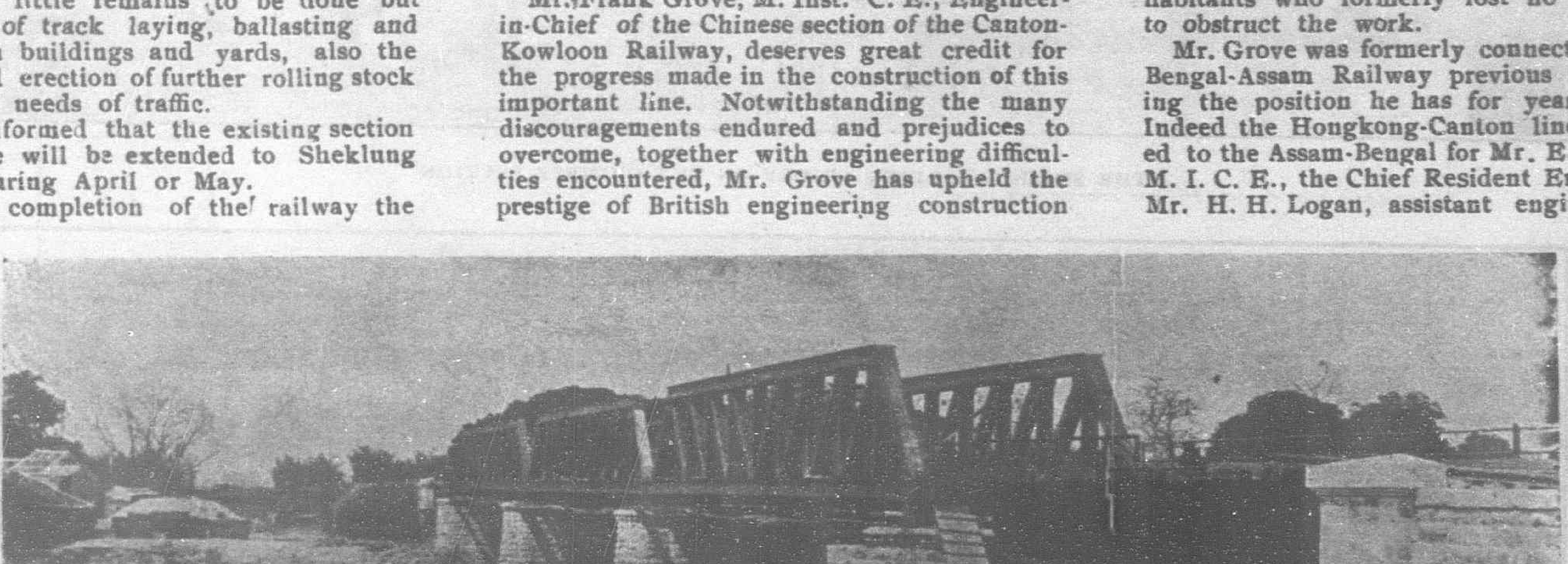
We are informed that the existing section of open line will be extended to Sheklung (Mile 40) during April or May.

Upon the completion of the railway the travelling public will find an interesting journey awaiting them, the British and Chinese Sections combined, affording unusual and very beautiful scenic attractions apart from any engineering interest.

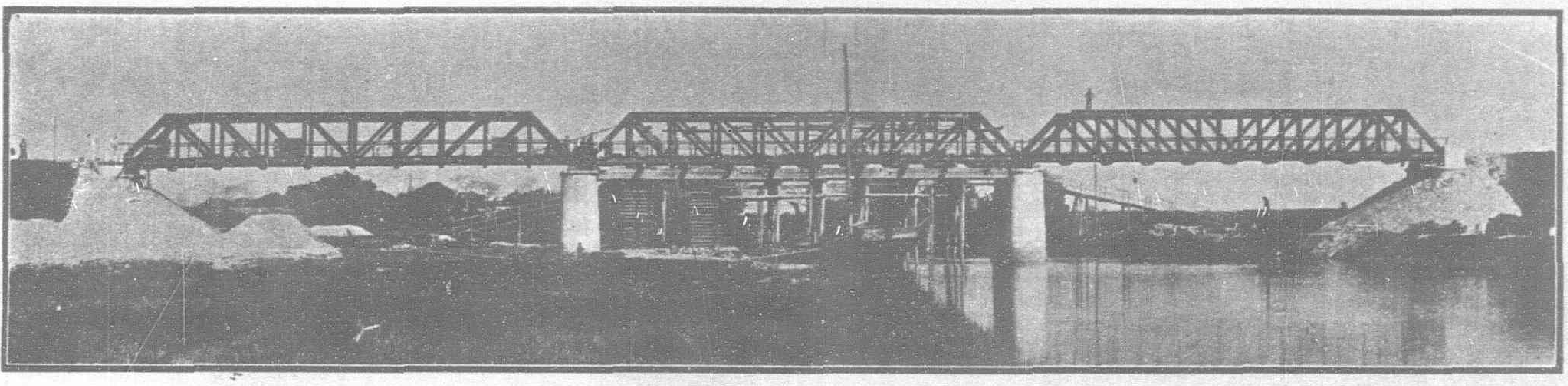
It is no exaggeration to state that the short railway journey from Hongkong to Canton will rank very high in point of interest, and the development of the line into one of the most important and financially successful railways is merely a question of time.

Mr. Frank Grove, M. Inst. C. E., Engineer-in-Chief of the Chinese section of the Canton-Kowloon Railway, deserves great credit for the progress made in the construction of this important line. Notwithstanding the many discouragements endured and prejudices to overcome, together with engineering difficulties encountered, Mr. Grove has upheld the prestige of British engineering construction standards in the enterprise now nearing completion. He was not discouraged by the many trying delays due to friction between the officials and the Chinese in their endeavor to fulfil their obligations to the railway, and the inhabitants along the right of way. By the exercise of great patience and tact, he carried on the work under these trying conditions and today it might be said that instead of the railway being unpopular, it appeals generally to the inhabitants who formerly lost no opportunity to obstruct the work.

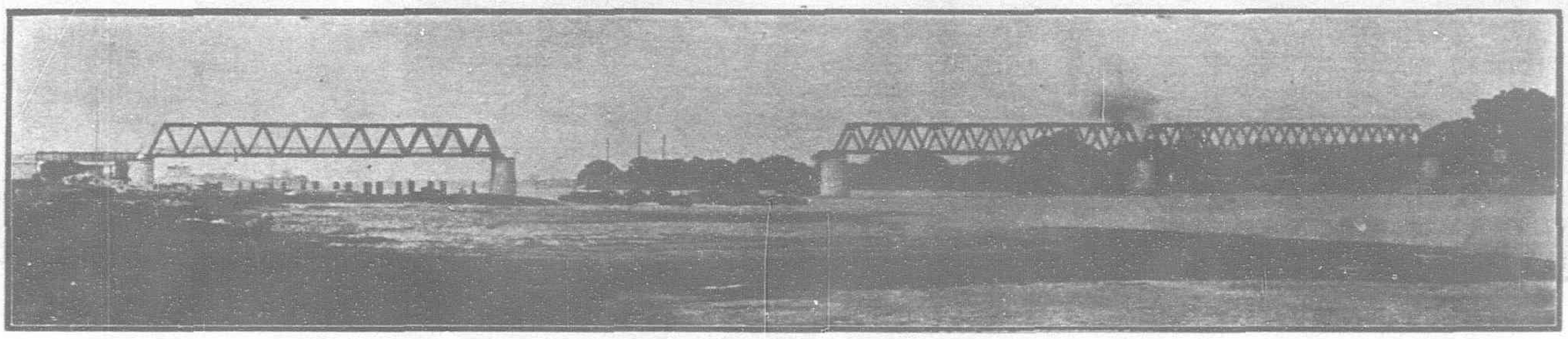
Mr. Grove was formerly connected with the Bengal-Assam Railway previous to undertaking the position he has for years occupied. Indeed the Hongkong-Canton line is indebted to the Assam-Bengal for Mr. E. S. Lindsay, M. I. C. E., the Chief Resident Engineer, and Mr. H. H. Logan, assistant engineer of the



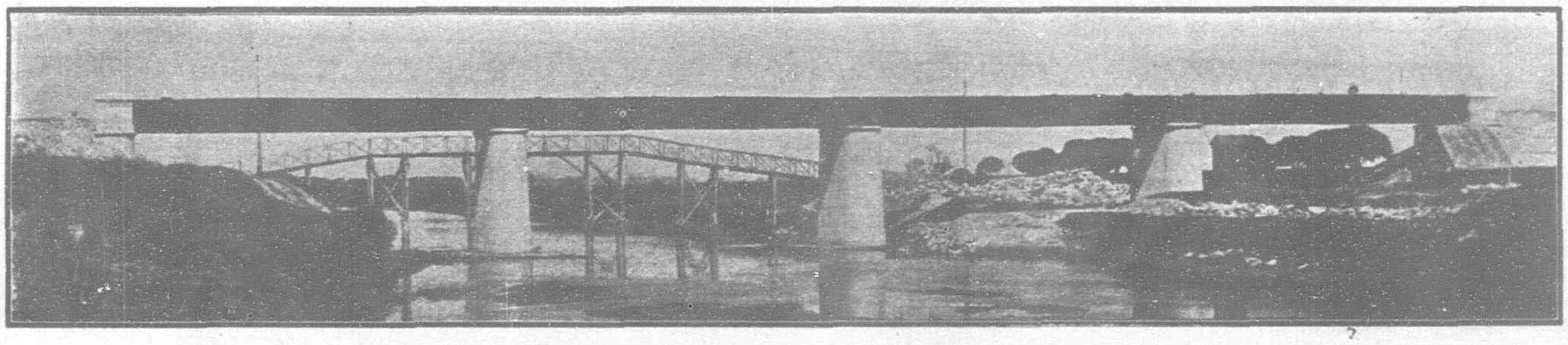
THE SHEK TAN RIVER BRIDGE



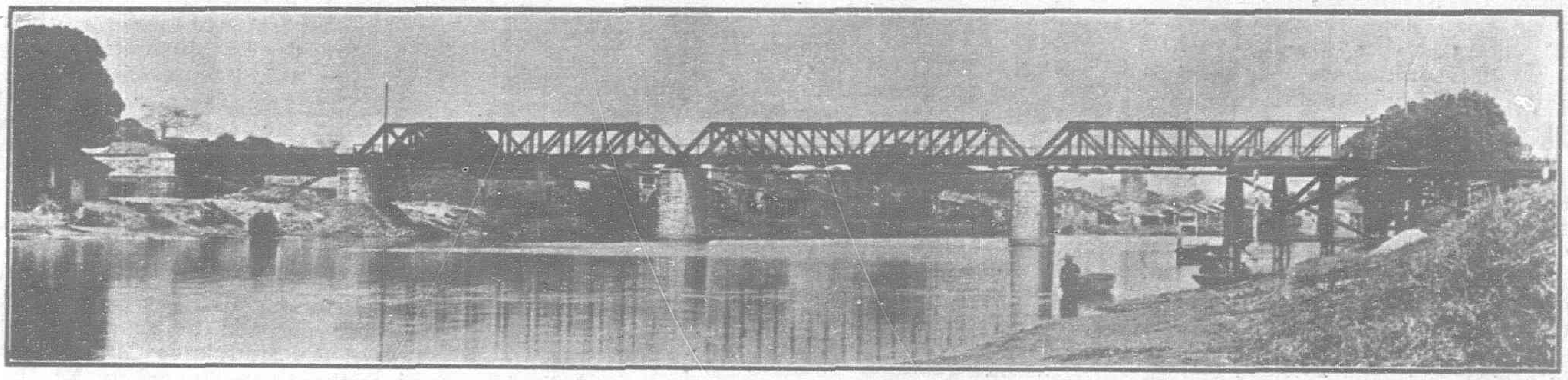
THE KAN SUI RIVER BRIDGE ON THE CHINESE SECTION



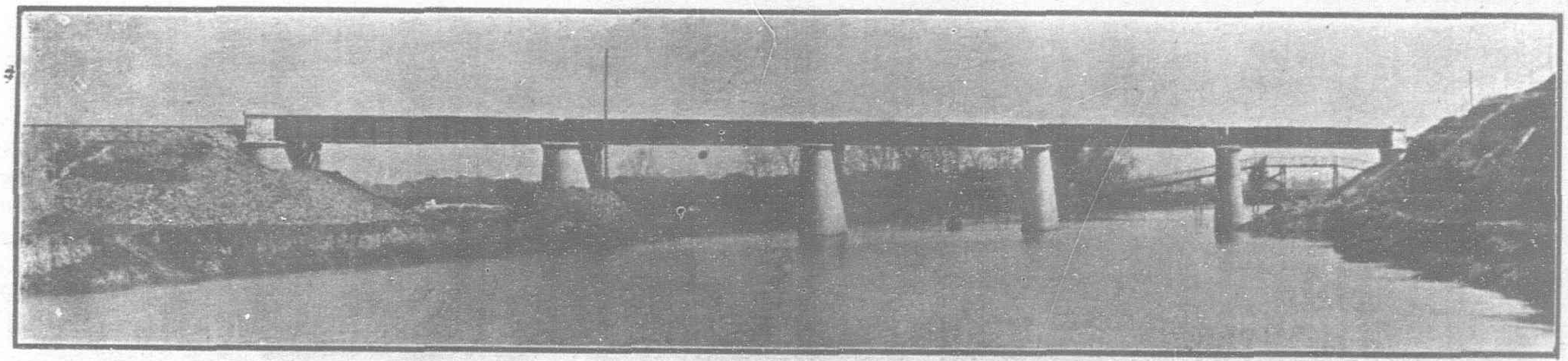
THE TUNG KUN RIVER BRIDGE ON THE CHINESE SECTION



THE PE KONG RIVER BRIDGE ON THE CHINESE SECTION



THE SHEK TAN RIVER BRIDGE ON THE CHINESE SECTION

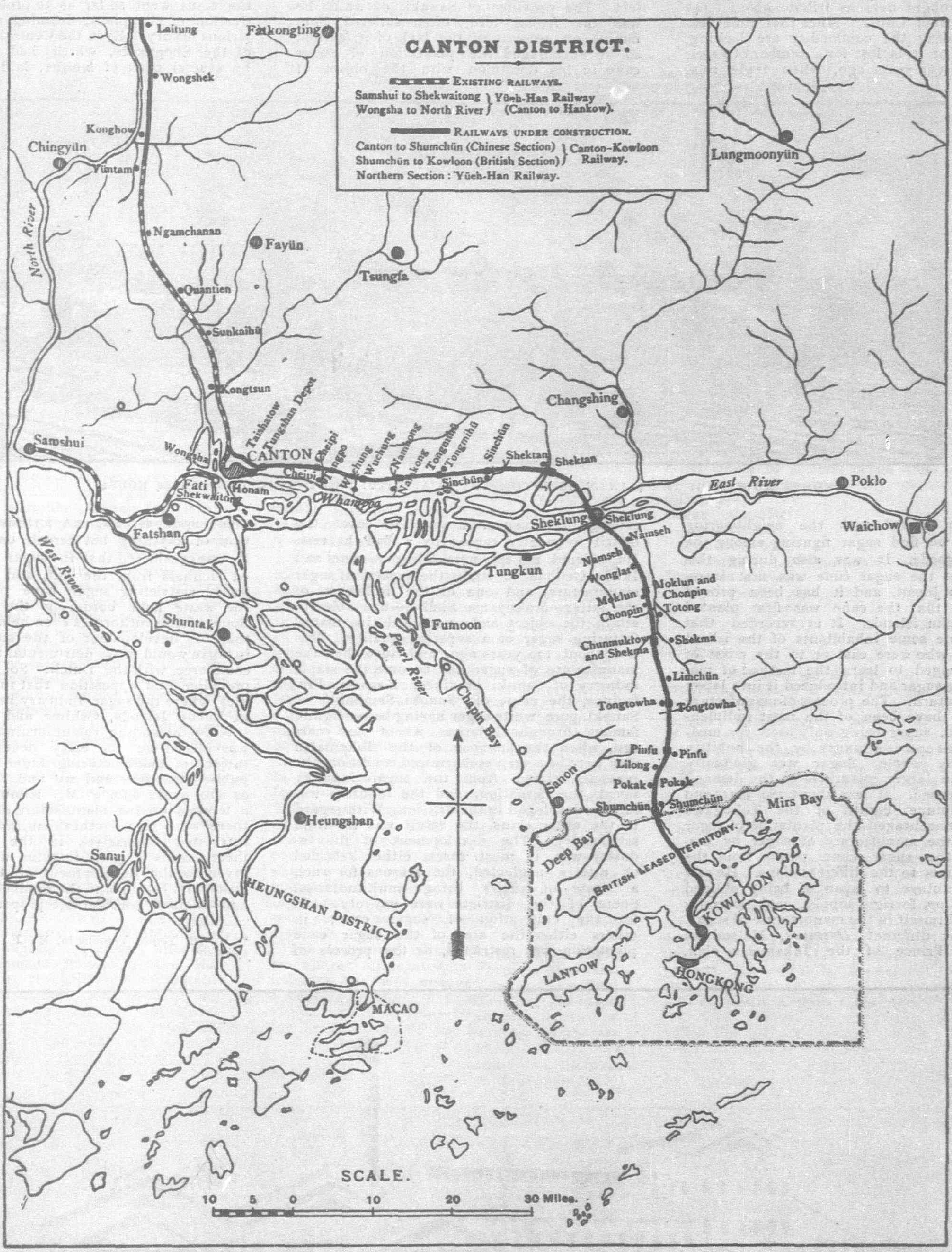


THE SIEN TSUN RIVER BRIDGE ON THE CHINESE SECTION

British section, who also served on this railway previous to their acceptance of these positions.

On the date of the opening of the first section Mr. Grove said:—"While delay is to be regretted, it should not be lost sight of that the rapid acquisition of large areas of land in the Kwangtung province presents a difficult task to Chinese officials which is not easily surmounted owing to the customs of China and the care necessary to avoid serious disturbances, especially in dealing with the removal of graves, tombs and temples.

With the exception of some comparatively trivial affairs it is at least a matter for congratulation that land purchase has proceeded to the extent indicated without great friction between officials and inhabitants, known in many districts for exceptionally truculent and determined habits, and that the safety of foreign engineers who have endeavoured to do their duties under trying conditions, has not caused greater anxiety than that experienced."

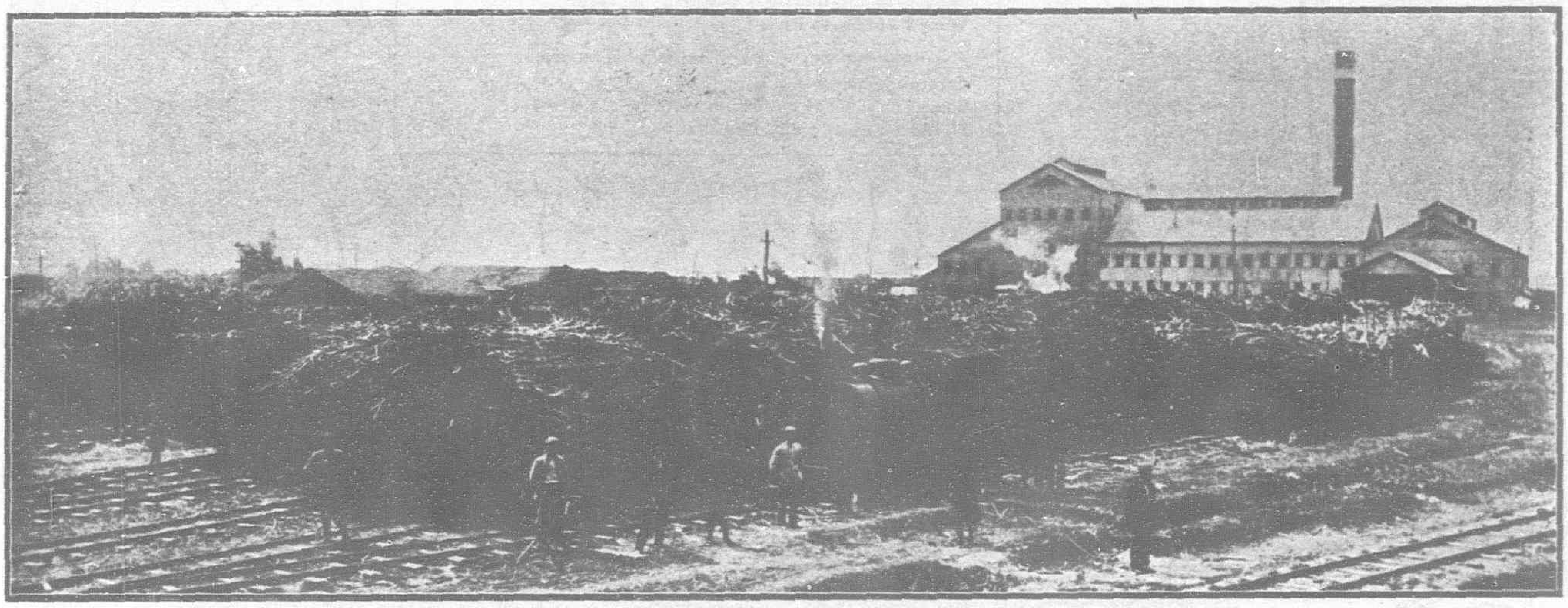


Canton Trade Report, 1908.

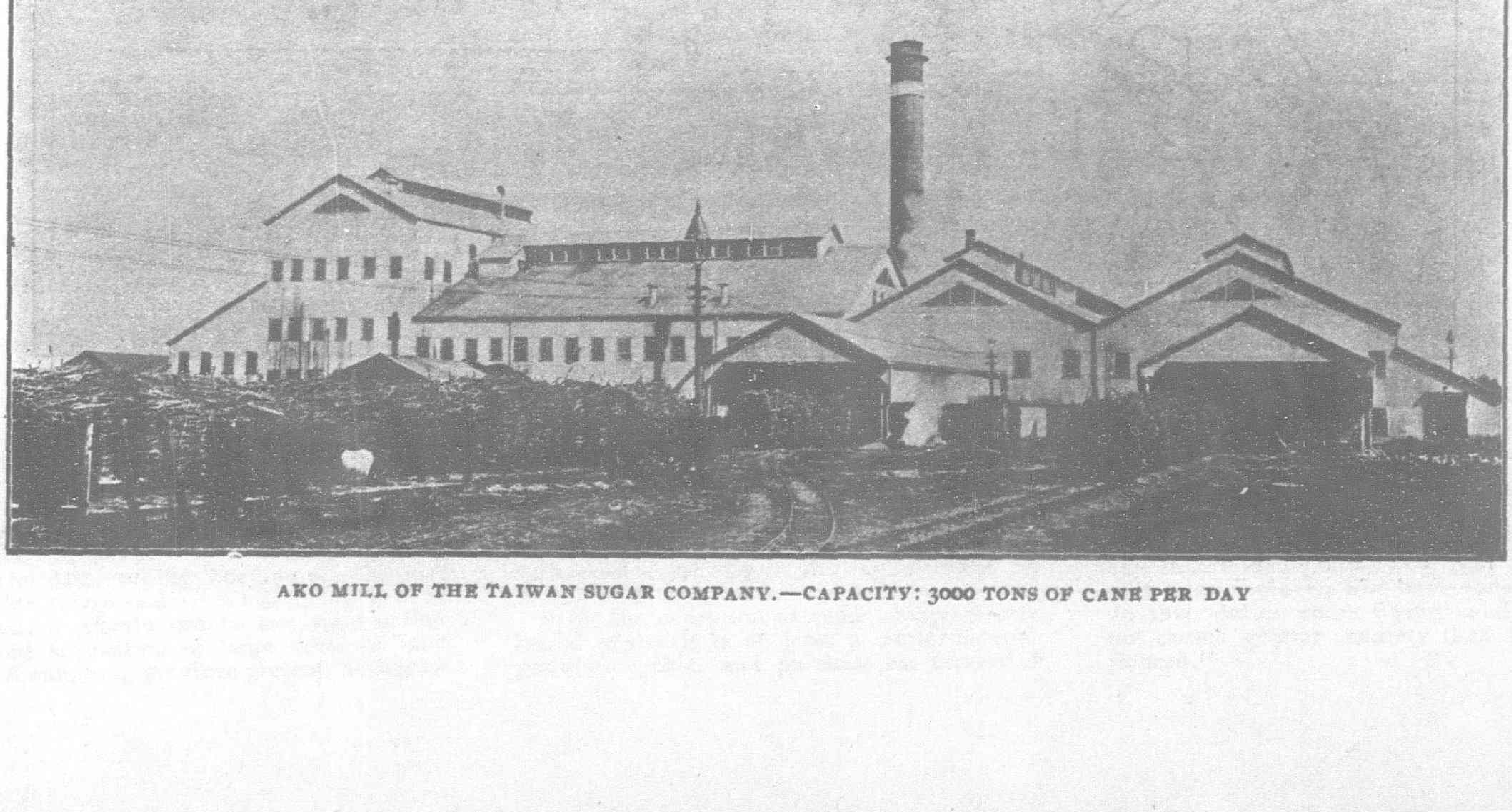
MAP OF THE CANTON DISTRICT SHOWING CANTON-KOWLOON RAILWAY LINE

THE FORMOSAN SUGAR INDUSTRY[*]

Sugar did not originally exist in Japan, but was brought over as tribute about 1,140 years ago from China. Since that time records regarding the commodity are lacking, and trace of it is lost for a number of years; but about 330 years ago, when trade relations were opened with the neighbouring countries, we find sugar figuring among the imported goods. It was also during this period that the sugar cane was first introduced into Japan, and it has been proved by history that the cane was first planted in the Luchu islands. It is recorded that at this time some inhabitants of the island of Oshima who were cast on to the coast of China managed to learn the method of manufacturing sugar and introduced it into Japan on their return. The process of manufacture appears to have been of the most rudimentary nature, sugar being only used for medical purposes and as a luxury by the nobility and wealthy people. Sugar was gradually imported in larger quantities as the demand for it increased. It was about 180 years ago that Yoshimune, eighth of the Tokugawa Shoguns, encouraged the plantation of sugar cane and the manufacture of sugar by distributing the sugar cane plants from the Luchu islands to the different clans. He saw the disadvantage to Japan of being obliged to depend on foreign supply, and specially interested himself in the manufacture of sugar. Among the different *Daimyos*, Matsudaira Yoriyasu, Prince of the Takamatsu clan, manifested the greatest interest in the subject. The province of Sanuki, of which he was the feudal lord, often suffered from famine on account of the lack of irrigation, so he encouraged the plantation of sugar cane in his dominion with the object of raising the revenue, in order to cover the deficit frequently caused by a bad harvest. He ordered his retainers Hiraga Gennai and Ikeda Genbun to study the process of sugar manufacture, and one of the followers of the latter—Mukoyama Shukei—was able to attain the object and succeeded in manufacturing sugar of a superior quality. This was about 120 years ago, and since then the manufacture of sugar has become the staple industry of Sanuki province, Kagawa Prefecture, the name of "Sanuki Sambon" or Sanuki pure white sugar having become quite famous throughout Japan. About 90 years ago, when the finances of the Takamatsu clan were in a very embarrassed condition, the revenue derived from the sugar industry saved the situation, and the industry was further developed in the district. With regard to the other clans, the result was far from satisfactory. The development of the industry was, in most cases, either retarded or utterly neglected, the reasons for such a state of affairs being multitudinous. Some of the districts were entirely unfit for the cultivation of sugar cane; in others either the area of the sugar cane plantation was restricted, or the process of manufacture kept a strict secret. Some of the clans went so far as to prohibit the cultivation of the plant, deeming sugar an injurious luxury. Even the Central Government of the Shogunate, which had been scared by several cases of famine, laid great importance upon cereals, and forbade the cultivation of anything but cereals on the farms. It was considered that the sugar cane extracted richness from the soil, and orders were issued restricting sugar cane plantations to the waste land bordering the river beds. Some of the authorities even held the opinion that the development of the sugar industry in Japan would prove detrimental to the foreign commerce with the Dutch. So great was the prejudice and opposition that the only localities where the sugar industry remained were in Luchu Islands, Oshima and Sanuki.


KOHEKIRO MILL OF THE TAIWAN SEITO COMPANY.—CAPACITY: 1000 TONS OF CANE IN 24 HOURS

Notwithstanding the unfortunate check that was placed on its early development, the subject of manufacturing sugar attracted the public attention, and we find that, as early as 110 years ago, a Mr. Kimura published a treatise on the manufacture of sugar, while there were many other eminent men who interested themselves in the subject. By these means a great impetus was indirectly given to the development of the sugar industry in Japan, and the production of sugar had attained considerable proportions during


AKO MILL OF THE TAIWAN SUGAR COMPANY.—CAPACITY: 3000 TONS OF CANE PER DAY

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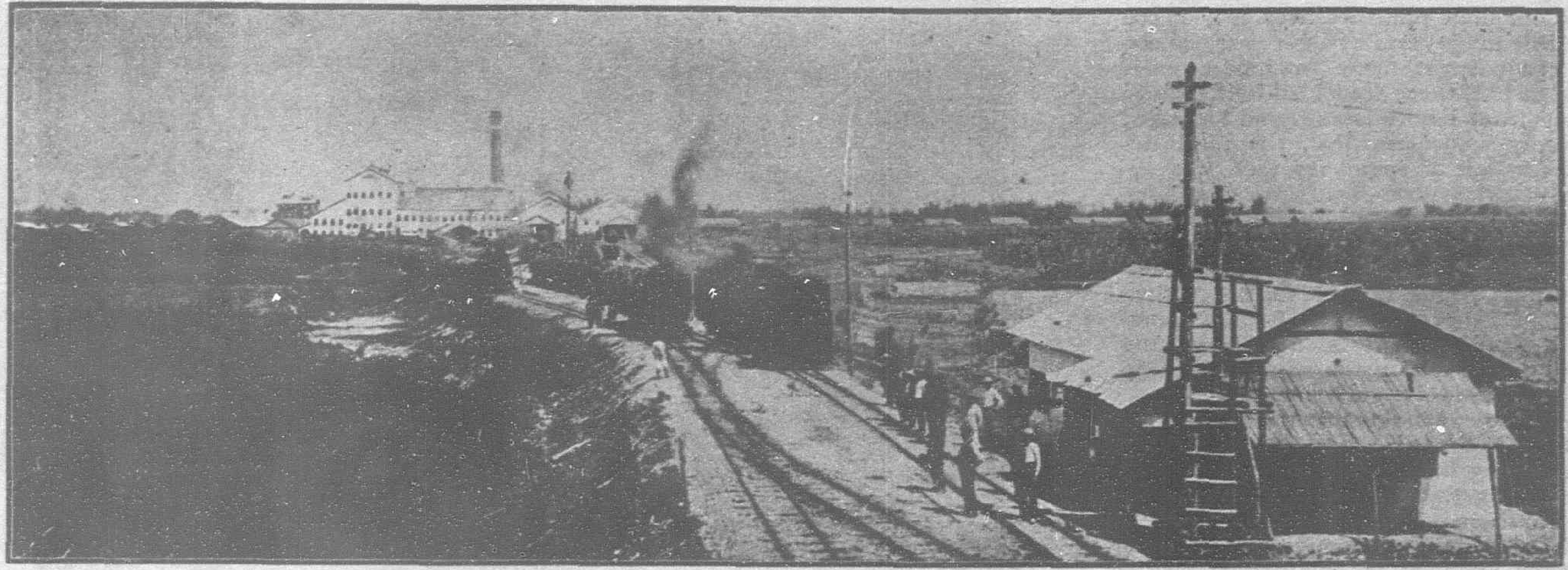
[*] By Dr Teijiro Yamamoto, M. P., in Japan's Industries.



AKO MILL OF THE TAIWAN SUGAR COMPANY

the years preceding the Meiji Restoration. With the abolition of the clan system of Government after the inauguration of the new régime, protection accorded to the sugar industry by the different clans was withdrawn, and the domestic sugar industry suffered a serious set-back by reason of the competition of imported sugar. This state of affairs turned the attention of the authorities to the encouragement and revival of the sugar industry. The Japanese Government, taking into consideration the fact that beet sugar was extensively manufactured in Occidental countries, and also being satisfied that beet was superior to the cane as raw material (because while the growth of the latter was limited to tropical climates, the former was suitable for temperate as well as cold climates), ordered samples of beetroot from the United States in 1872 and experimented with them in the North-Eastern provinces. Subsequently, in 1876, Mr. (now Marquis) Masayoshi Matsukata, who was Director of the Bureau for the Development of Agriculture, brought to Japan beetroot seeds from France and planted them experimentally in the Norh-Eastern provinces. The results were highly satisfactory, and as a result of the above trials, a sugar manufacturing plant was purchased from France in 1879 at a cost of over Y130,000 which was installed by the Mombetsu Sugar Company, established at Mombetsu in Hokkaido under Government control. The whole business was subsequently transferred to a private concern, which commenced operations under the title of the Mombetsu Sugar Manufacturing Company. Some time afterwards a large sugar manufacturing company was established at Sapporo, in Hokkaido. However, after several years' experience, it was proved that the climate of the Hokkaido was not suitable for the culture of beet, and both of the above concerns were eventually compelled to cease operations, and for some years the question of sugar manufacture on a large scale was shelved. In 1895, however, when the island of Formosa was ceded by China to Japan, the Japanese Government issued regulations for the protection of the sugar industry, and ever since that time the subject of manufacturing the crude product from sugar cane has been attracting the attention of both the authorities and the people, immense strides having since been made in the progress of the industry. At the present time there are ten large sugar manufacturing concerns, worked by machinery, the total capital invested being Y50,000,000 and the value of the machinery installed exceeding Y10,000,000.

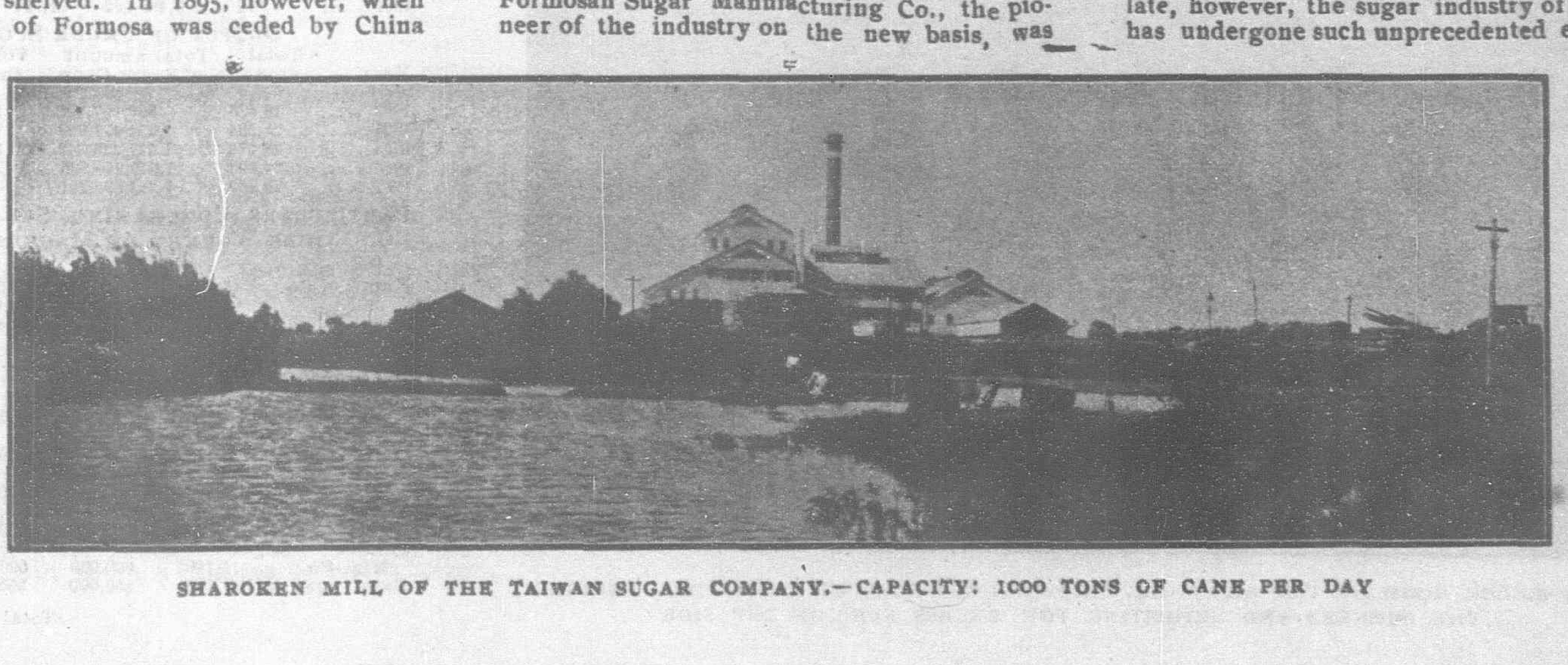
The general business is divided into two sections, namely, the sugar refining and crude sugar industries. In Japan the former industry was developed by degrees, and in 1895 the Nippon Sugar Refining Company was established by Baron Eichi Shibusawa and others, while in Tokyo Mr. Tosaburo Suzuki inaugurated The Nippon Refined Sugar Manufacturing Company, and in both machinery of the latest and most improved pattern was installed. Although afterwards a few other sugar refineries were established, these were either bought up or incorporated, so that at present there are only three *sugar refining* companies in Japan, namely, Dai Nippon Sugar Manufacturing Co., Ltd. (Capital Y12,000,000), Yokohama Sugar Refining Co. (Capital Y2,250,000) and Kobe Sugar Refining Co. (Capital Y2,000,000) excepting those under contemplation and a few concerns which are engaged in a subsidiary industry of sugar manufacture in Formosa. The total producing capacity per day is about 800 tons, the total output for 1908 being approximately 1,500,000 bags.

The companies manufacturing crude sugar are almost all located in Formosa where the industry has been engaged in for more than a century, though of course since Japanese capital and knowledge have been applied to the development of the industry in the island it has shown marked progress. The Formosan Sugar Manufacturing Co., the pioneer of the industry on the new basis, was established in 1900, and was followed by the Yensuiko Sugar Manufacturing Co. and a few others. As the result of assistance and encouragement afforded by the authorities, the yearly output has been speedily augmented so that in 1908 there were eight large companies and about 900 native sugar mills, the latter being of a most crude and primitive description. The producing capacity is as follows:—

Sugar Manufacturing Cos. with new machinery.,........	8 Companies.	184,140,000 lbs.
Improved native sugar mils......	53 do.	63,648,000 ,,
Old native sugar mills..............	845 do.	22,824,000 ,,
Total		270,612,000 ,,

Thus Formosa stands first as the sugar-producing locality of Japan, the Luchu Islands coming next, having developed their sugar industry as the result of the promulgation of the sugar protection regulations in 1906. A few other localities are also supplying crude sugar to the refineries on the main land.

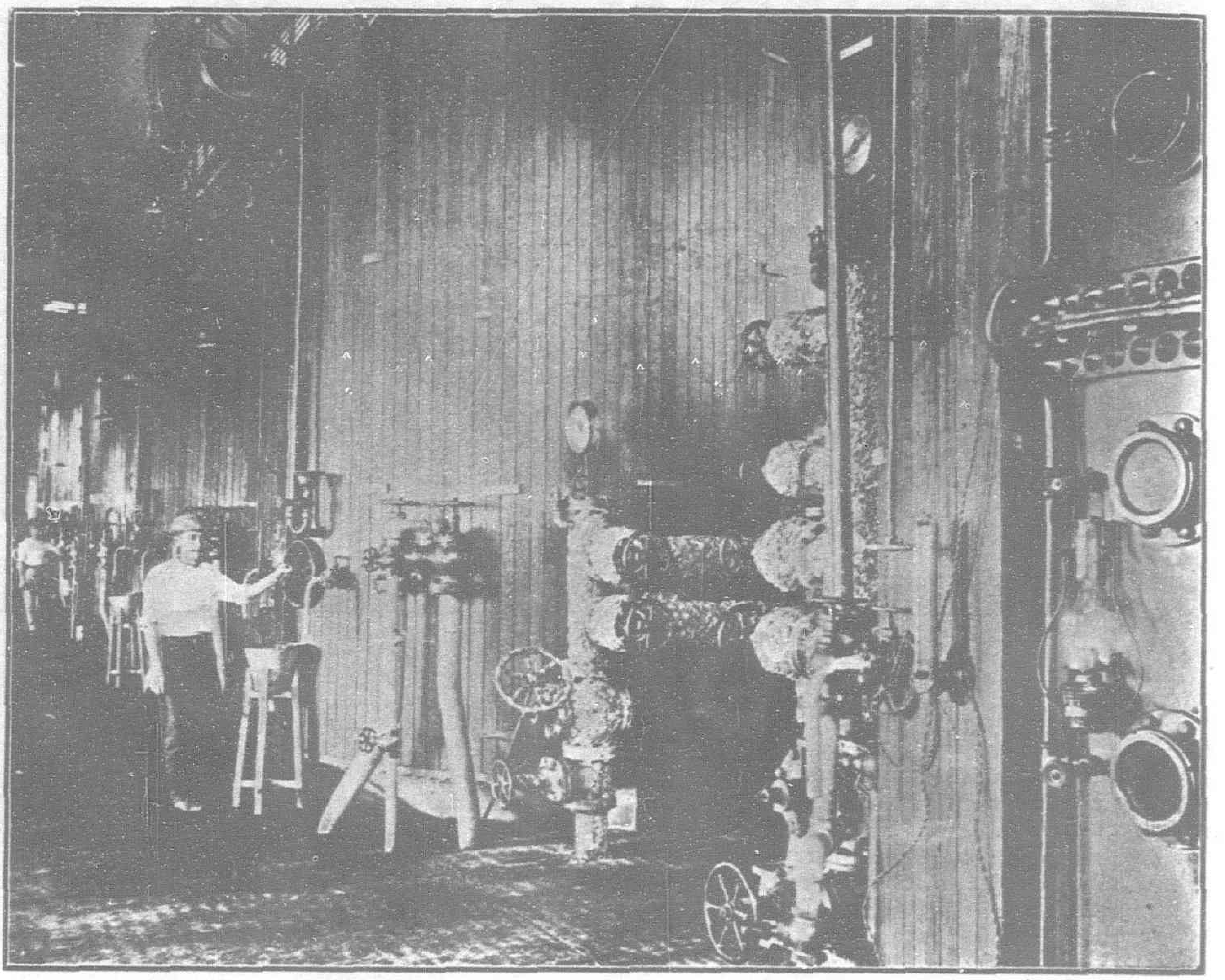
The total amount of sugar consumed in Japan may fairly safely be estimated at from 500,000,000 lbs. to 550,000,000 lbs. per year. The amount of consumption about the year 1895 was not more than 350,000,000 lbs. and while there may have been some fluctuations during the interval as the result of the sugar consumption tax and the effects caused by the additional extraordinary special taxes levied after the late Russo-Japanese war, the demand for sugar has been gradually increasing to a considerable amount up to the present day, and it is also evident that there will be a further increase in demand in the future. Until a few years ago, 150,000,000 lbs. was supplied by domestic companies, while the balance, 350,000,000 lbs., was supplied by imports from foreign countries. Of late, however, the sugar industry of Formosa has undergone such unprecedented expansion



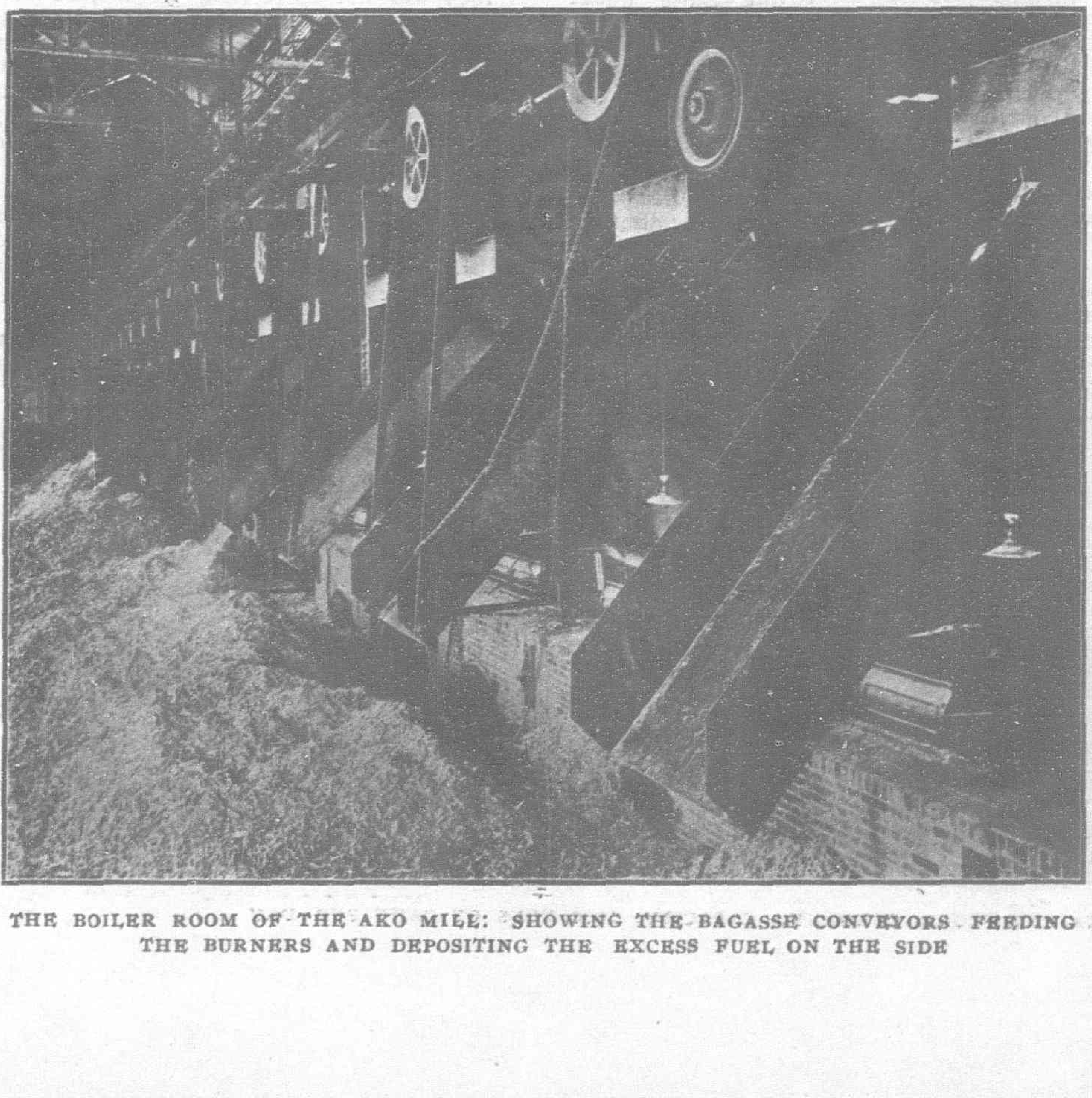
SHAROKEN MILL OF THE TAIWAN SUGAR COMPANY.—CAPACITY: 1000 TONS OF CANE PER DAY that the island alone produces over 200,000,000 lbs. (Machine-made crude sugar 120,000,000 lbs. and crude sugar made by native mills 80,000,000 lbs.). If there are added to the above the products from Luchu Islands and Shikoku, approximately 80,000,000 lbs., the total domestic production of sugar for 1908 was approximately 280,000,000 lbs., thus supplying more than half of the total yearly consumption of sugar in Japan.

Viewed from climatic and geological standpoints, Formosa is most suitable for the cultivation of sugar cane as well as for the manufacture of sugar, and it is not surprising that the industry has made such rapid progress in the island.

Although the exact date of the origin of the sugar industry in Formosa cannot be stated with certainty, it may be taken for granted that it commenced together with the immigration of the Chinese into the southern parts of the island. After the occupation by the Dutch in 1624 they engaged in the manufacture of sugar quite extensively and exported a considerable quantity to Japan. Records of 250 years ago show that at about that time the process of sugar manufacture appears to have been improved, and the yearly production was greatly increased as the result of the increase in demand and expansion of trade on the island. Although there may have been some fluctuations during the interval, sugar formed the most important article of export from Formosa, ranking next to Oolong tea and on the same scale as rice and camphor. After the island had been ceded to Japan, the Japanese Government established a Government-General for the administration of the island and devoted its entire energy to the development of its natural resources. A Department for the development of resources was instituted in the Civil Administration Bureau, special attention being thus paid to the question of industrial and agricultural development. In 1902 a Formosan Sugar Bureau was established, followed by the promulgation of the regulations for the encouragement of the industry. In 1907 the Bureau was transferred to Tainan. Previous to the above, in 1903, an experimental sugar cane plantation had been established at Daimokuko in order to make various experiments on sugar manufacture and also for the cultivation of sugar cane, several plantations being also opened in other districts. The name of the above institution was afterwards changed to the Sugar Industry Experimental Office, and efforts were directed towards the improvement of the plants. Subsidies were granted for fertilising and irrigation so as to encourage the cultivation of waste land, and special privileges were granted to the promoters of sugar manufacturing concerns, such as allowing preliminary expenses, subsidies for the purchase of machinery, and giving free land for plantations. In fact, no efforts were spared by the authorities for the encouragement of the industry. At the same time steps were taken in the main island to encourage capitalists to invest in the establishment of sugar mills with the latest and most improved machinery. In 1900 the Formosan Sugar Manufacturing Company was inaugurated, this being the first of the kind entirely based on the new system. To this company the Government-General granted a subsidy of Y12,000 and the factory was considered a model one. The Government-General further purchased new machinery and encouraged its use, the result being the establishment of the Yensuiko Sugar Manufacturing Company, and a few other smaller concerns of a similar kind. The authorities not only paid great attention to the sugar manufacturing business, but also to the agricultural industry. As early as the year 1896, sugar cane plants were introduced from the Hawaiian Islands and experimented upon in Formosa, this being the first Hawaiian sugar cane ever planted in the island, those previously introduced being the South China or Java species. Careful attention was also paid by the authorities to the improvement of fertilisers, irrigation, cultivation and reclamation of waste land, etc., all of which helped the improvement and progress of the industry in the island, and thus it has attained its present development.



VACUUM PAN FLOOR OF THE AKO MILL



THE BOILER ROOM OF THE AKO MILL: SHOWING THE BAGASSE CONVEYORS FEEDING THE BURNERS AND DEPOSITING THE EXCESS FUEL ON THE SIDE

The following table shows the development of the sugar industry in Formosa:—

OUTPUT OF SUGAR CANE.

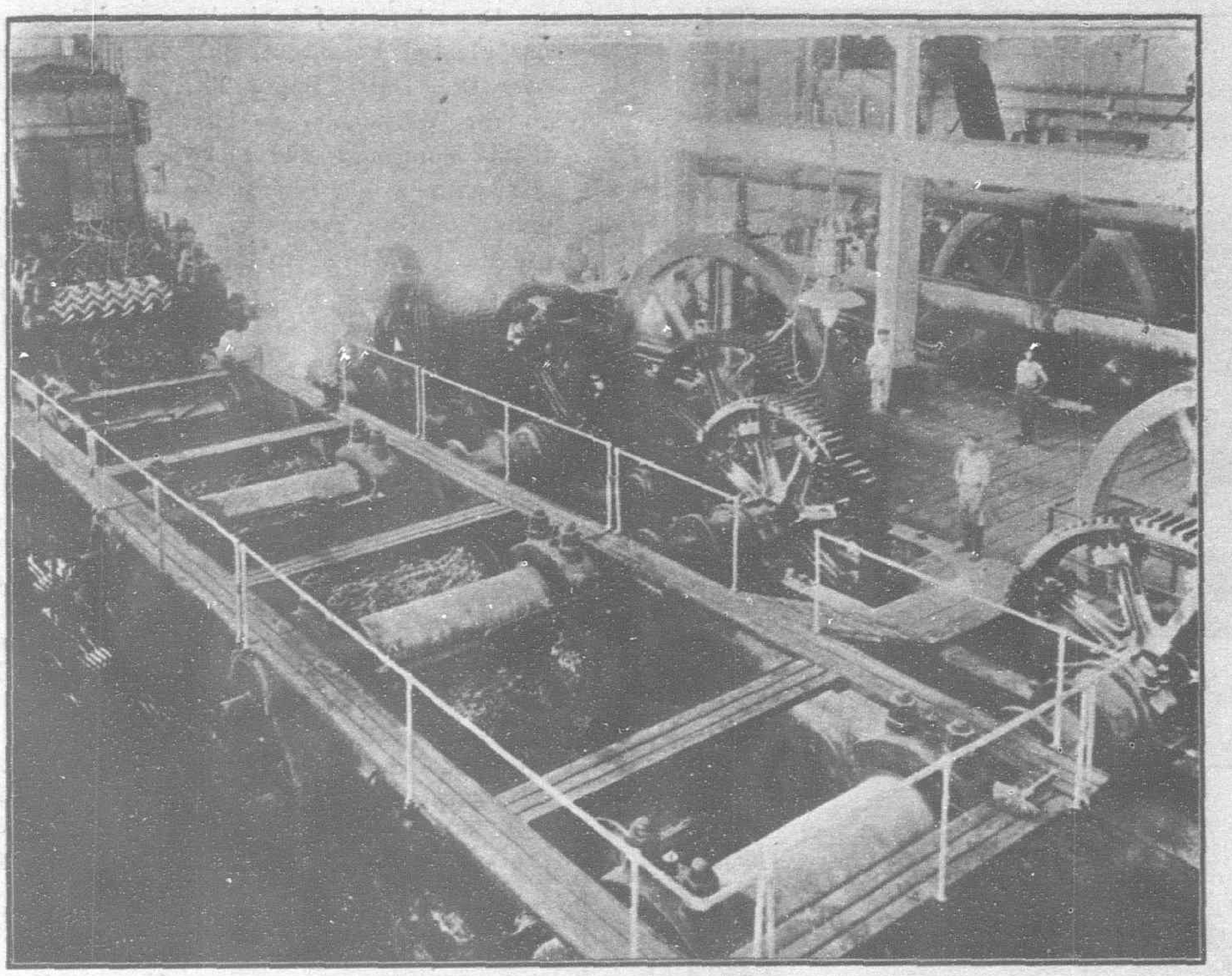
	Area planted with improved plants.	Output of improved plants	Area planted with old plants.	Output of old plants.
	ko.	lbs	*ko.*	lbs.
1903......	37	4,461,700	16,489	678,699,292
1904......	240	18,175,189	21,354	1,056,799,740
1905......	800	48,321,000	24,177	1,023,902,366
1906	2,615	182,308,852	32,190	1,496,937,524
1907......	7,872	520,489,502	21,987	843,105,789

OUTPUT OF CRUDE SUGAR

Year.	Total area.	Total amount of Sugar Cane.	Total amount of Crude Sugar.
	ko	lbs.	lbs.
1903......	16,526	863,157,902	50,680,561
1904......	21,594	1,074,974,929	75,834,354
1905......	24,976	1,072,223,366	82,632,658
1906......	34,806	1,679,245,906	127,388,416
1907......	29,859	1,363,595,291	106,175,955

PARTICULARS CONCERNING SUGAR COMPANIES WORKED BY MACHINERY.

Name of Co.	Establishment. Year.	Capital. Yen.	Paid-up Capital. Yen.	Compressing capacity per day. Tons.
Formosan Sugar Mfg. Co.	1900	12,000,000	....	4,300
Dai Nippon Sugar Mfg. Co. Formosan Factory....	1905	4,500,000	4,500,000	1.200
Yensuiko Sugar Mfg. Co.	1903	5,000,000	1,250,000	1,380
Meiji Sugar Mfg. Co.	1906	5,000,000	1,750,000	1,560
Toyo Sugar Mfg. Co.	1907	5,000,000	2,500,000	1,000
Shinko Sugar Mfg. Co.	1903	600,000	600,000	500
Bain Sugar Mill.	1905	850,000	350,000	300
			Total......	10,280



THE MILL ROOM OF THE AKO PLANTATION, A NINE ROLLER MILL WITH "KRAJEWSKI" CRUSHER AND A REGRINDER, MAKING IN ALL FOURTEEN ROLLS.—ONE OF THE LARGEST AND MOST POWERFUL MILLS IN THE WORLD

As may be observed from the above figures, the sugar industry on modern principles is but of recent origin in Japan, and there appears to be a great field for further development in the future. The climate and soil of Japan are very well adapted for the cultivation of both sugar cane and beet, although the production of sugar cane per *ko* in Formosa, for example, ranges from 90,000 to 120,000 lbs., and is rather low compared to the production in Java, Cuba and Hawaii. Ever since the introduction into Formosa of Hawaiian sugar cane, the quality of both Lahina and Rose Bamboo has improved, and the amount of production has been greatly augmented. As the superiority of the above qualities are fully recognised, they are being introduced in great quantities, so much so that in 1908 the area planted with them occupied 80% to 90% of the total area of the sugar cane plantations. It is expected that so long as it does not interfere with the rice paddy fields there will be a further increase in the area of sugar cane plantations, as well as for the improved varieties. Moreover, in the event of a more superior quality of sugar cane being cultivated, a further impetus will be given to the development of the sugar industry; and if the best variety of sugar cane is selected, proper attention is paid to manuring, etc., by skilled labour, the necessary steps are taken for irrigation and drainage, improved agricultural machinery such as steam ploughs, etc., are introduced, and the method of cultivation is based on scientific principles, it is expected that there will be almost no limit to the expansion of the industry. Moreover, many sugar manufacturing concerns have arisen lately with the most improved types of machinery, some of the sugar mills being more extensive than those in Hawaii, so that the present productive power of the industry in Formosa has reached an immense amount.

With regard to the refining of sugar, its import, which averaged 200,000,000 lbs. per year for the period of six years from 1895 to 1900, decreased to below 100,000,000 lbs. on an average during the following six years—1901-1906—which forms most striking evidence of the marked development of the industry.

If progress is continued at the present rate, Japan will be in a position to supply in the near future the entire home demand of 500,000,000 lbs. and export her surplus product to foreign countries, and it would not then be a difficult matter for Japan to occupy the foremost position among sugar-producing countries of the world.

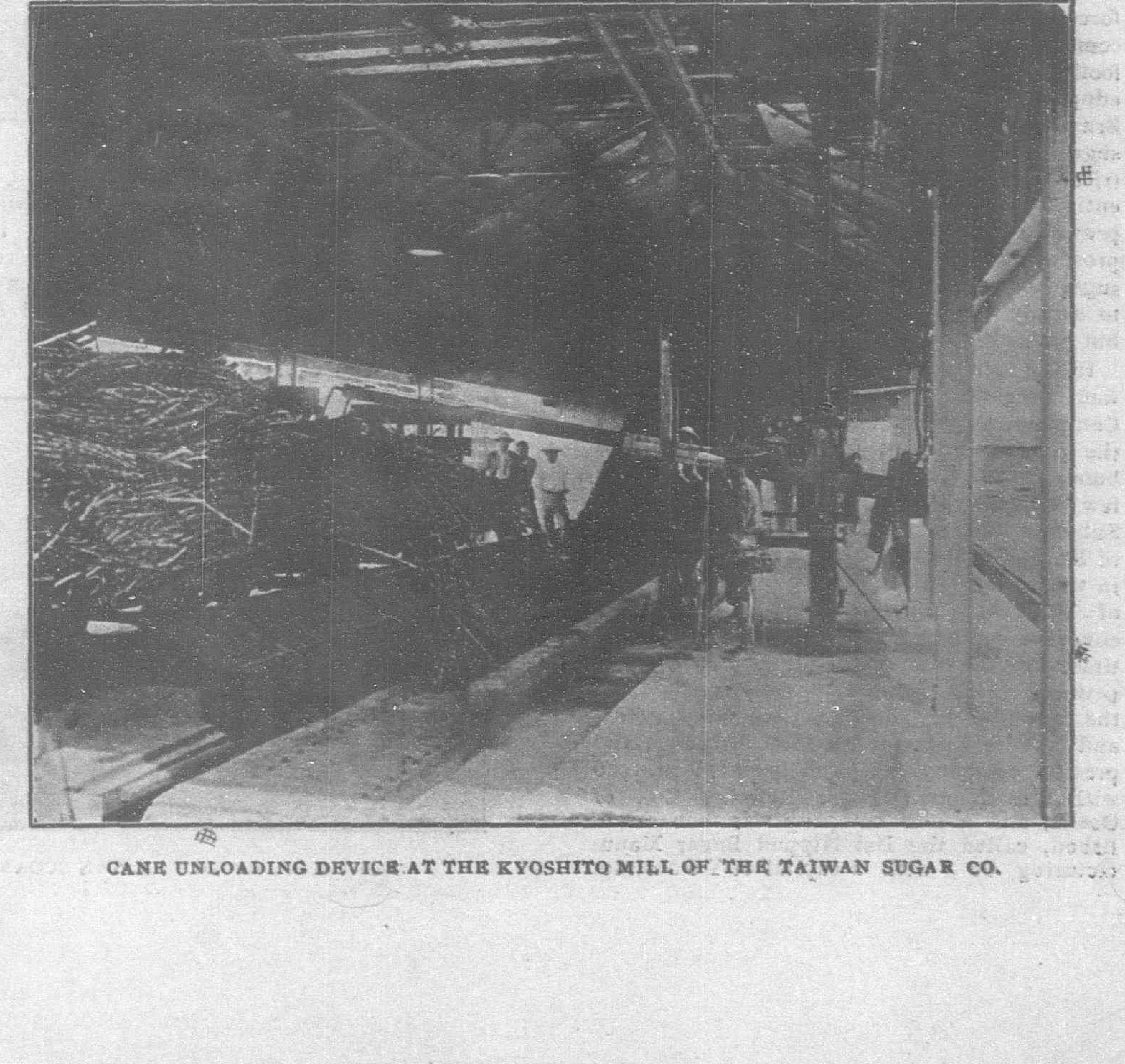
In concluding the present treatise there is one point which requires consideration, and that is the question of taxation. In Japan ever since the beginning of the sugar industry, protective measures have been adopted, which have helped the rapid development of the industry. But with the promulgation of the Sugar Consumption Tax Law in 1901, followed by the Special Extraordinary Tax levied in 1904, and again the increased taxes in January, 1905, the tendency of increase in the demand for sugar suddenly suffered a check, and the expense and labour which had hitherto been expended by the Government were to a large extent nullified, and consequently the development of the sugar industry suffered considerably. The fallacy of such a policy at last appears to have been appreciated, and some of the taxes are destined to be abrogated sooner or later. At the same time, if on the one hand, by the economical utilisation of land and improvement in the agricultural side of the industry, the cost of production is economised, there appears to be a bright prospect before the sugar industry in Japan. Moreover, the soil of Korea and Manchuria, being very well fitted for the cultivation of beet, if that is developed, it will not fail to be of great benefit to the sugar industry of Japan by thus supplying cheap raw material. The cheapness of labour in the above localities is also another great advantage which will contribute towards the further progress and development of the sugar industry of Japan.

Note:—"Ko" corresponds to 25 acres.

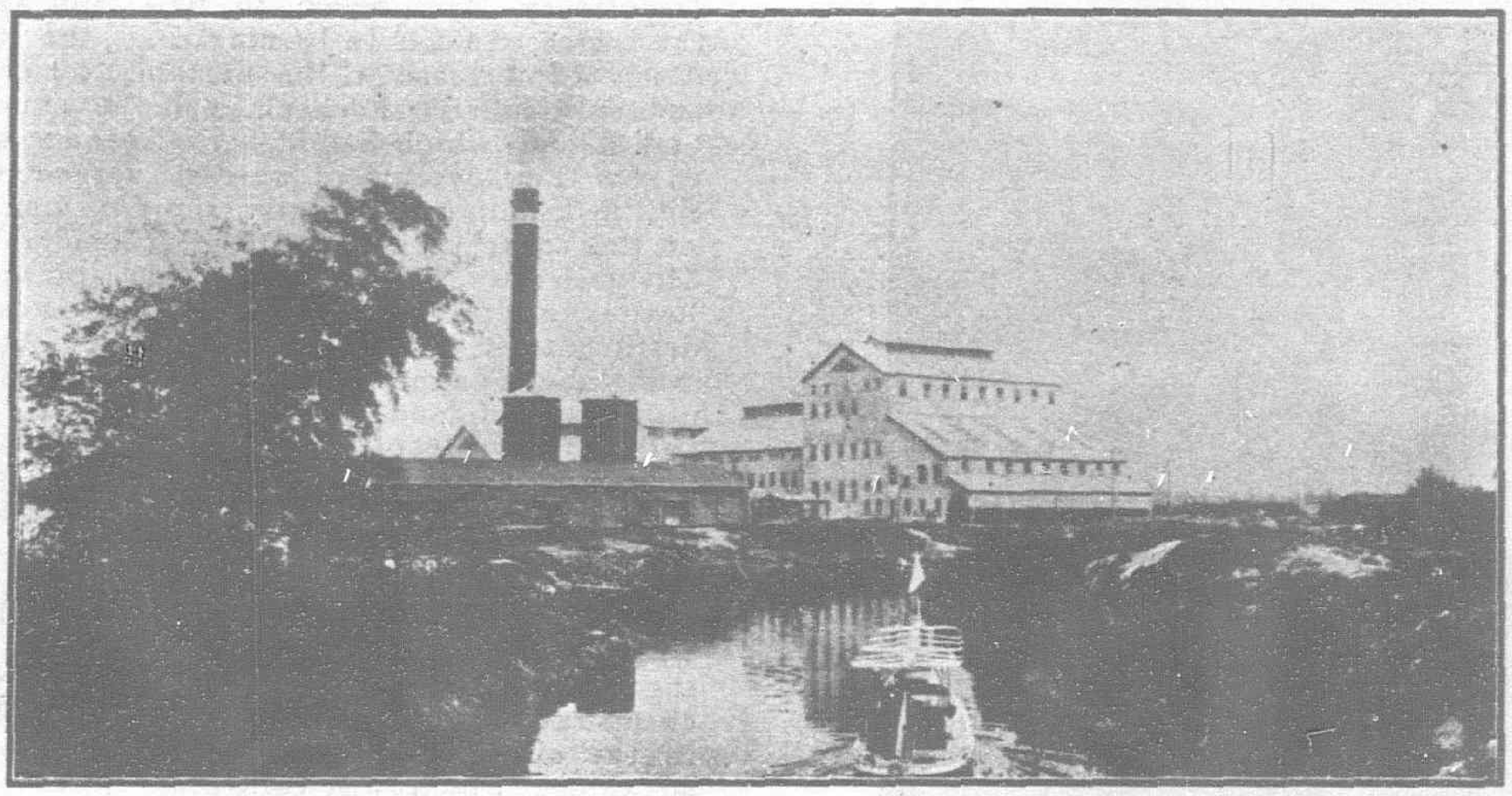
DAI NIPPON SEITO KABUSHIKI KAISHA

(THE JAPAN SUGAR MANUFACTURING CO., LTD.)

This company is the pioneer of the sugar refining concerns of Japan. The development of the Japanese sugar refining industry is of quite recent date. Even after the Restoration of the Meiji era it was found impossible for Japanese refined sugar to compete with that imported from Java and Hongkong. This being a very great loss to the country, an undertaking was set on foot, about the year 1892, for the purpose of refining sugar, but this had to be dropped on account of the outbreak of war between Japan and China. Subsequently, in 1895, the Yayeyama Sugar Refining Company was floated, but the concern was worked on old methods and therefore was not altogether a success. In 1896, the Nippon Sugar Refining Co., the predecessor of the present Japan Sugar Manufacturing Co., Ltd., was established in Tokyo, a year after the war had been concluded between Japan and China, by Mr. Tozaburo Suzuki and a few others, with a capital of Y300,000, the object of the new enterprise being the refining of sugar by means of the latest and most improved machinery, and also the



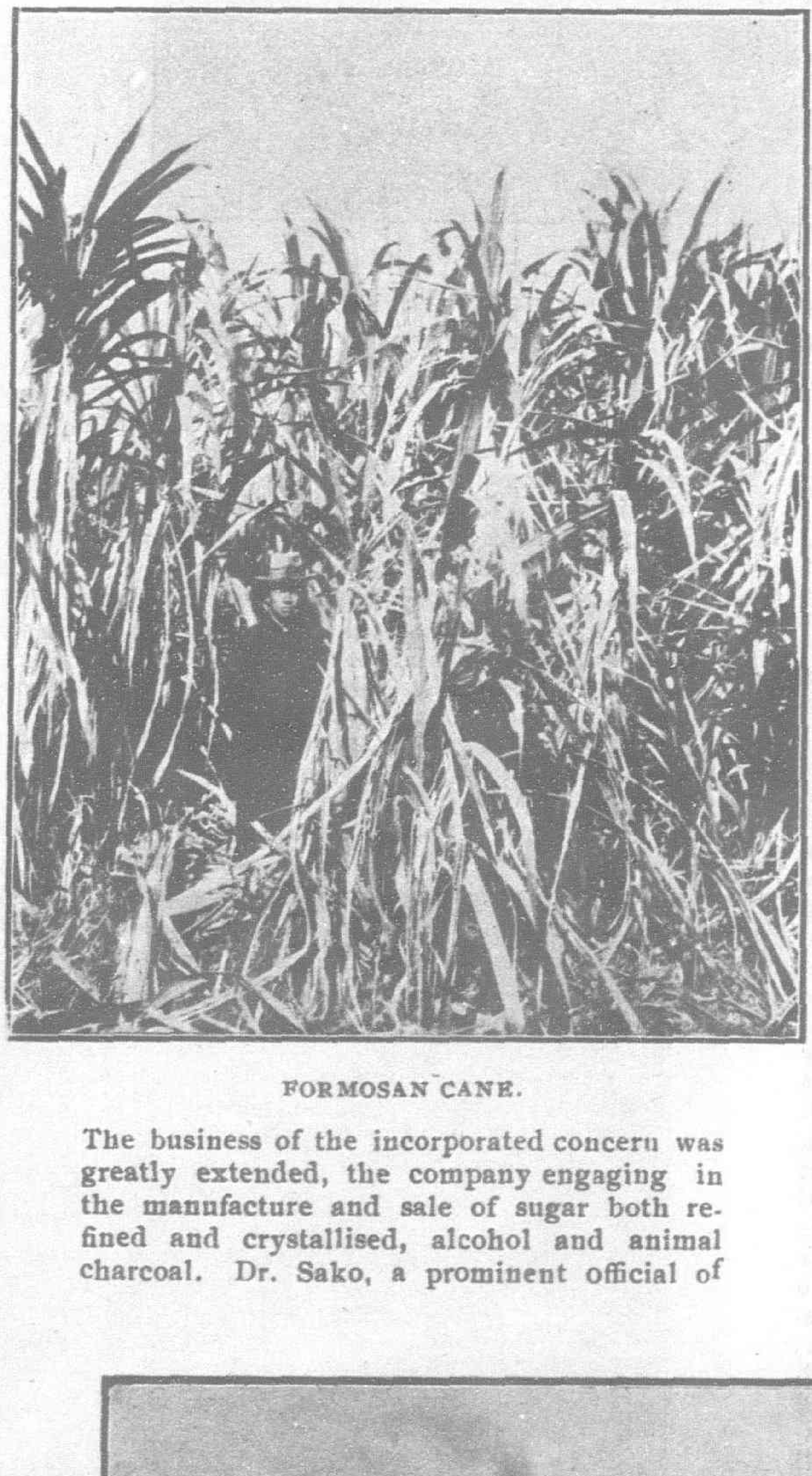
CANE UNLOADING DEVICE AT THE KYOSHITO MILL OF THE TAIWAN SUGAR CO.



THE KOHEKERU MILL AND CANAL OF THE TAIWAN SUGAR CO.

manufacture of crystal sugar by machinery, and by a new process invented by Mr. Suzuki. In the following year a new branch of the undertaking, that for the manufacture of rum, was opened, and business gradually expanded, so that in 1899 the capital had to be increased to Y2,000,000. However, a reaction set in soon after this. In addition to the great increase of imported Hongkong sugar, a large increase of beet sugar was also coming in from European countries, as the result of subsidies afforded to the beet sugar industries in those countries. Moreover, as the revised tariff was to come into force imposing an increase of duty on sugar, many firms imported large stocks in anticipation, the result being a marked fall in the price of the article. The company was thus beset with difficulties on all sides, which, however, it was able to successfully overcome. After some years several causes combined to improve the condition of the company. Within a few years the cheap raw sugar imported in anticipation of the increase of duty was entirely consumed, the price of sugar all over the world improved, and with the failure of the beet crop in Europe and the rebate law coming into force in Japan in 1902, the business of the company was involuntarily placed on a better footing. Also, as a result of the resolutions adopted at the Sugar Conference held in Brussels in 1902, by which subsidies on beet sugar were abolished in the European countries, the import of beet sugar into Japan entirely ceased The above circumstance proved of great advantage to the business prospects of the company, and the crystal sugar manufactured was not only sufficient to supply the demand for the home market but was also exported to China and Korea.

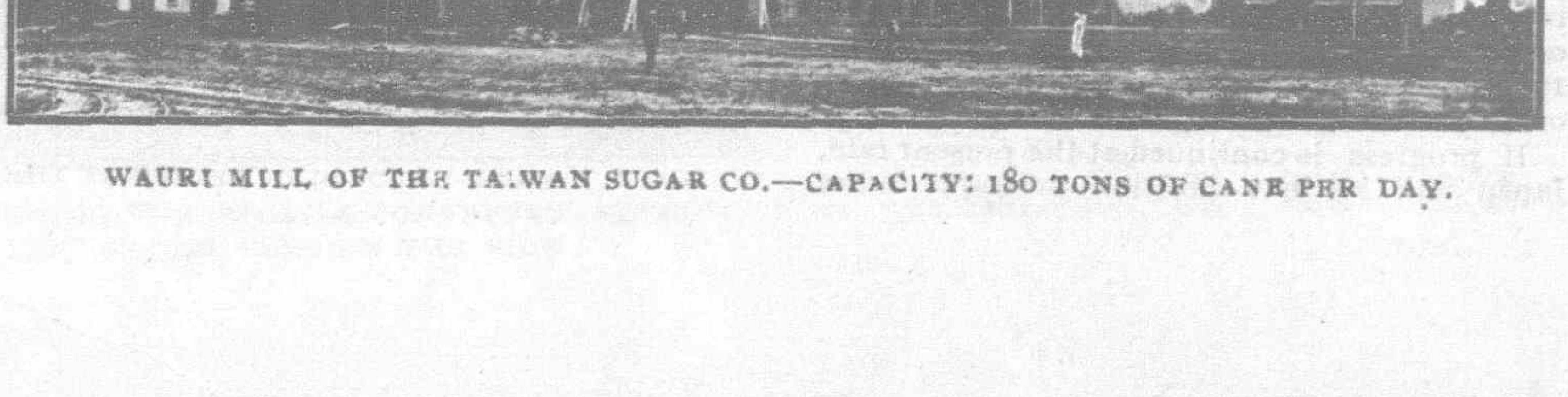
In the same year that the present company was inaugurated, the Nippon Sugar Refining Company, of Osaka, was established, under the joint promotion of Messrs. Eiichi Shibusawa (Baron), Jutaro Matsumoto, and a few others with a capital of Y1,500,000. Subsequently, in 1902, Messrs. Suzuki & Co., of Kobe, established a sugar refinery at Dairi, in the vicinity of Moji harbour, with a capital of Y2,000,000. These three sugar refining concerns competed with each other for some time, but the disadvantages of useless competition being ultimately fully recognized, the question of amalgamation was mooted, and as the first step in that direction, the present company was amalgamated in 1906 with the Nippon Sugar Refining Co., of Osaka, and a new company was then established, called the Dai Nippon Sugar Manufacturing Co., with a capital of Y 6,000,000.



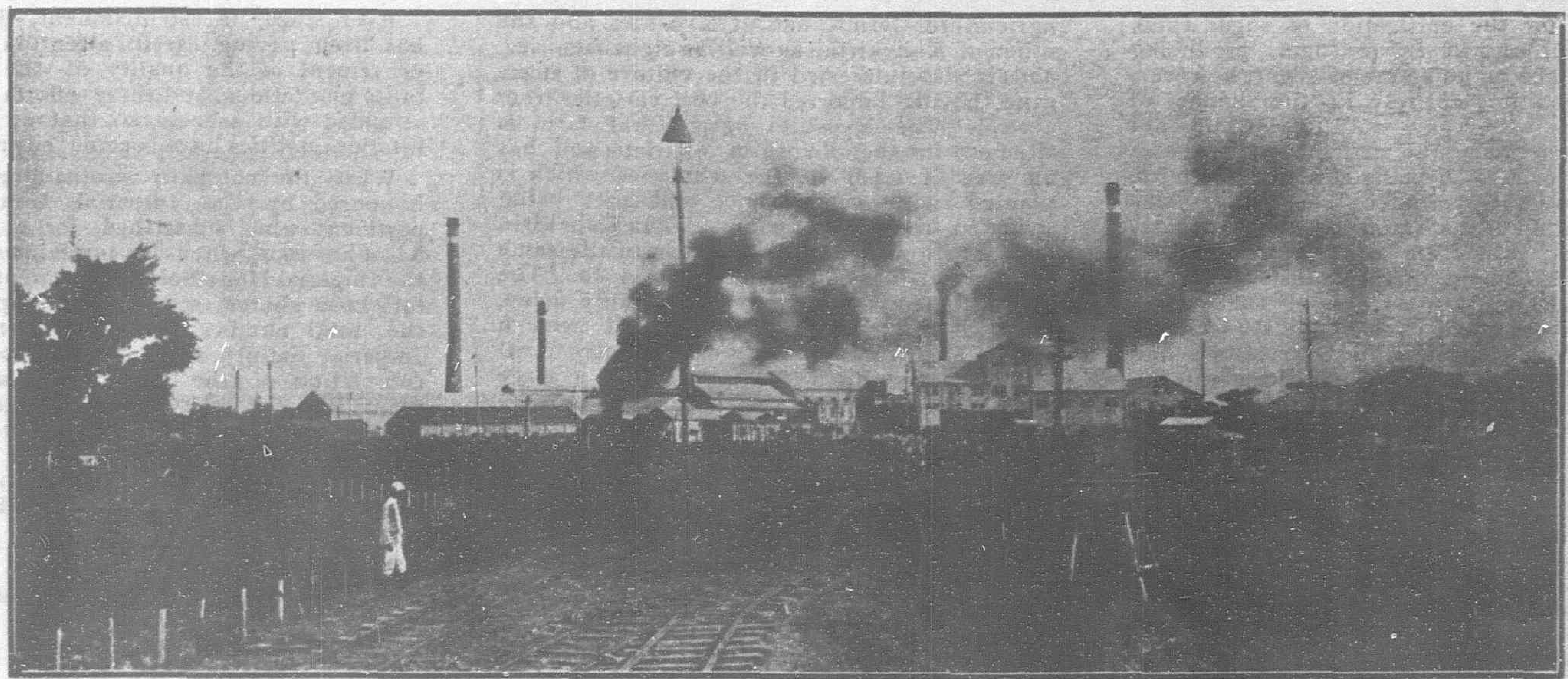
FORMOSAN CANE.

The business of the incorporated concern was greatly extended, the company engaging in the manufacture and sale of sugar both refined and crystallised, alcohol and animal charcoal. Dr. Sako, a prominent official of the Department of Agriculture and Commerce, was elected President, and in the following year the Dairi Sugar Refinery was bought up for Y6,500,000 so that the total capital of the company was augmented to Y12,500,000 with a corresponding expansion in its manufacturing capacity. The subsequent depression in the business world caused a decrease in the sale of the products, which fact, coupled with several other causes, placed the affairs of the company in a most difficult position and resulted in the resignation of the entire Board of Directors, and in the election of the present members of the Board. Since the present directors have taken up office they have been strenuously labouring for the readjustment of the company's affairs in order to place its business on a sound basis. It is confidently expected that with the revival in the conditions of the market and the readjustment of the Sugar Tax Law, the company will be able to regain its former prosperity. Moreover, as there is a tendency towards a marked increase in the export of the company's crystallised sugar to the Chinese and Korean markets, the future prospects of the company's business are very encouraging.

REFINERIES.—The refineries of the company are located at Tokyo, Osaka, and Dairi, the Tokyo refinery being divided into two, known as the No. 1 and No. 2 Refinery respectively. The capacity of No. 1 Refinery was increased to 127 tons per day in 1908, while the No. 2 Refinery, which was established in 1901, was extended in 1904 to a capacity of 100 tons and in 1907 to 127 tons per day. The machinery installed in the above two refineries was first purchased from Messrs. Blair, Campbell & McClean, of Scotland, James Buchanan & Sons, of Liverpool, and the Caledonian Foundry and Engine Works, Greenock, and also from Messrs. Watson, Laidlaw & Co., of Glasgow. Later, the centrifugal molasses separator was ordered from the Suzuki Iron Works, under the management of Mr. Tozaburo Suzuki. The crystallised sugar factory was first established in 1896 and it was extended in 1906, the addition being made of a new crystallised sugar manufactory. The machinery installed at the Osaka Sugar Refinery is by Messrs. Blake, Barclay & Co., Greenock, Scotland, with a capacity of 150 tons per day. Recently machinery for the manufacture of cube sugar, the demand for which is daily increasing, was purchased from Messrs. Harsey & Co., U. S. A. The machinery installed at the Dairi Sugar Refinery was purchased from Messrs. Babcock & Willcox, Harvey & Co., Watson, Laidlaw & Co., and James Buchanan & Sons, and is at present being worked at a capacity of 300 tons per day.



WAURI MILL OF THE TAIWAN SUGAR CO.—CAPACITY: 180 TONS OF CANE PER DAY.



KYOSHITO MILL OF THE TAIWAN SUGAR COMPANY.—CAPACITY: 1100 TONS OF CANE IN 24 HOURS

Thus the total yearly output from the three refineries amounts to about 350,000,000 lbs., which is more than sufficient to supply the total yearly consumption of refined sugar in Japan, estimated approximately at 230,000,000 lbs. The quality is of first grade, competing successfully with the imported foreign sugar. It has also been exported to China and Korea of late to the extent of about Y10,000,000.

Besides the sugar refineries above mentioned, a new raw sugar factory was established in January, 1907, within the jurisdiction of Torokucho, in Formosa, with a capital of Y4,500,000 having a sugar cane plantation of over 15,000 acres. The producing capacity being 1,200 tons per day, it is in a position to supply 14,000 or 15,000 tons of raw sugar per year. Within the plantation there are over one hundred miles of railway for the company's special use. As more new machinery has been ordered from Braunschweigische Maschinen Bonanhalt, Germany, the producing capacity will be still further increased in the near future. Up to the present raw sugar has been almost exclusively imported from Java, but with the development of the raw sugar industry in Formosa it has been decided to use 250,000 bags of Formosan raw sugar for 1910, and it is expected that Formosan raw sugar will ultimately replace that from Java.

At the time of the inauguration of the company it undertook the manufacture of crystallised sugar together with sugar refining. In June, 1896, when the capital of the company was increased to Y600,000, the manufacture of rum was added. The crystallised sugar (sugar candy) is made by means of a new invention of Mr. Tozaburo Suzuki, which gives results not yet attained in Europe and America, and which is the cause of the increase in the demand in China and other countries. Besides this, alcohol is made from the molasses and is of pure quality, and in compliance with the pharmaceutical regulations. The manufacture of cube sugar was commenced in 1907. Another product of the company is moist sugar, for which the Japanese have a great liking. This variety is very palatable, and is more advantageous in use for the manufacture of confectionery, having properties which cannot be obtained from the imported sugar.

The company has been granted the privilege of specially supplying its products to the Yokosuka Naval Station, and also to the Imperial Household Department, these honours greatly enhancing the credit of the company. The company was also awarded a First Class Medal at the 5th National Industrial Exhibition, in 1903, and a Silver Medal at the Tokyo Industrial Exhibition in 1907.

The present Board of Directors is composed of the following, who are all prominent members of business circles in Japan:—

President: Raita Fujiyama, Esq. Managing Directors: Nagayuki Takayama, Esq., Ryoritsu Izawa, Esq. Directors: Seki Hoshino, Esq.; Yoshikane Hamamoto, Esq.; Seizo Nakamura, Esq. Auditors: Yoshio Sashida, Esq.; Hisayoshi Ounabara, Esq.

MEIJI SEITO KABUSHIKI KAISHA

(THE MEIJI SUGAR MANUFACTURING CO., LTD.)

The promising position which Formosa occupies as a sugar producing district is fully recognised. The Formosan Sugar Manufacturing Co., Ltd. (Taiwan Seito Kabushiki Kaisha) was the first concern of the kind to be established and many others followed in its train at the period of the great business boom which occurred in Japan upon the conclusion of the Russo-Japanese war. The Meiji Sugar Manufacturing Co., Ltd., was inaugurated in December, 1906, being one of those factories installed with machinery of latest type which has continued to carry on business up to the present.

The company owns three sugar factories, namely No. 1, No. 2 and Mato. The first mentioned is located in the proximity of the main office, the No. 2 factory is situated at Saiho Matosho, Daitoro, Kagicho, and the Mato factory is in Matosho, Tainancho. The total number of hands employed, including both the clerical staff and labourers is about 260.

The work at No. 1 factory was commenced from November, 1907, and that at the No. 2 factory is expected to begin from 1910. The sugar extracting capacity per diem of the No. 1 factory is estimated at 750 tons, No. 2 factory at 1,000 tons and the Mato factory at 60 tons. Thus, if the average production of compressed sugar from the factories, excepting No. 2, be taken at 800 tons, the total amount of sugar extracted for 120 days—one sugar manufacturing term—would amount to 96,000 tons, and assuming the percentage of refined sugar per ton to be 10, the total amount of refined sugar produced would amount to 9,600 tons or 14,400,000 lbs. The above is the actual average yearly output of the company's refined sugar, but in the event of the raw materials obtainable from the sugar plantations in the locality being increased there is no doubt that the productive capacity of the concern would be considerably augmented, and this without taking into consideration the completion of work of the No. 2 factory.

The company has a line of railway in operation for the transportation of raw materials, the total length of the line at present working being about 50 miles. When the whole length of the line is completed the total mileage will amount to 100. There are eight locomotives of 15 tons weight each, 400 freight cars of 4-5 tons capacity each, which are chiefly employed in the transport of raw materials but also in general railway traffic for freight and passengers.

The sugar manufactured by the company is all sold to the sugar dealers of the main island, being intended for home consumption. As the amount of production is gradually increasing it is intended to send a part of the raw sugar to the main island to be used as raw materials for the refineries.

The present conditions of the company's business are as follows:—

Capital	-Y-5,000,000
Paid-up capital	-Y-2,750,000
Annual productive capacity	1,810 tons.
Railways	100 miles,
Fields	29,685 *ko.*
Sugar Plantations	2,526 *ko.*

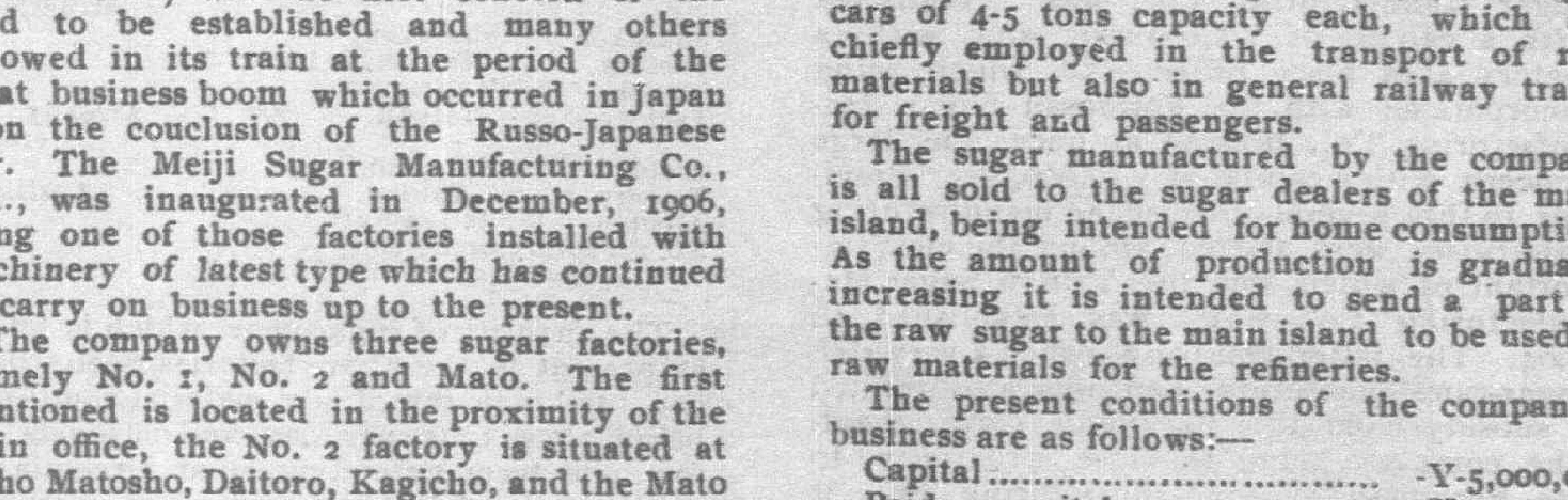
The present members of the Board of Directors are as follows:—

Presiding Director: Senkichi Ogawa, Esq.
Managing Director: Hanji Soma, Esq.
Directors: Masabumi Asada, Esq.; Yoshihisa Usui, Esq.; Sumisaburo Uemura, Esq.
Auditors: Naoyoshi Yamamoto, Esq.; Baron Morimasa Takei.

TAIWAN SEITO KABUSHIKI KAISHA.

(THE FORMOSAN SUGAR MANUFACTURING CO., LITD.)

Formosa has been noted since olden times for its suitability in climate and geological



TAIWAN SUGAR COMPANY.—PLANTATION RAILWAY BRIEGE (5300 FEET) OVER THE TAMSUI RIVER formation for the cultivation of sugar cane, and is well known as a sugar producing country. The manufacture of sugar, however, having been left entirely in the hands of the natives who knew nothing but the old primitive methods, the article produced was very inferior. Such being the state of affairs, the Formosan Government has, ever since the occupation of the island by the Japanese, been giving protection and encouragement to the development of the industry. On the other hand, in 1900, as one of the results of this encouragement, a syndicate of Japanese millionaires, including the Mitsui and Mori families, established the Formosan Sugar Manufacturing Co., Ltd., with a capital of one million yen, the object of which was the renovation of the process of sugar manufacture. The main office and the factory were established at Kyoshitosho, in Tainan, Formosa, and the manufacture of sugar by means of the latest type of machinery was commenced, the appliances being the very first of the kind ever used in the island. In order to encourage the development of the industry the Formosan Government granted a subsidy of 6% per annum on the paid-up capital, the Imperial Household Department taking up one thousand shares.

In the following year (1902) the work was commenced, and although very many difficulties were experienced at first, the business flourished, so that although the term of subsidy terminated in 1905, the concern was not only able to maintain itself, but the business was greatly expanded, the capital being increased to Y5,000,000, two new factories being erected, sugar cane plantations opened, and a special railway constructed within the company's grounds in order to facilitate the conveyance of raw materials and the manufactured sugar. Subsequently, in 1905, a new company, the Daito Sugar Manufacturing Co., was inaugurated with a capital of Y5,000,000, and with a factory at a place called Ako, which, being incorporated with the Formosan Sugar Manufacturing Co., became at once one large concern with a capital of Y10,000,000. Previous to this, several other sugar manufacturing enterprises were started, among the most important of which was the Tainan Sugar Manufacturing Co., which was established in 1904. The latter company owned a very rich sugar-cane plantation, and was also granted a subsidy from the Formosan Government. The company being in close proximity to the Formosan Sugar Manufacturing Co., it was eventually incorporated in 1909 its capital being augmented to Y12,000 000 and the business further expanded. Thus the business of the company, notwithstanding the fact that not more than ten years had elapsed since its inauguration, was greatly enlarged as the result of the enthusiastic backing of both the Government and the people, as well as by the able management of the Directors, and it is now one of the most flourishing sugar mills in Japan. In the management of the business a most conservative policy was followed, aiming at a sound and healthy development, and a certain portion of the yearly dividend being set aside for placing the foundation on a firmer basis, so that the company is at present not only one of the largest but also one of the soundest sugar manufacturing concerns in Japan.

The company owns a most rich and extensive sugar-cane plantation in the Ako and Tainan districts, the locality being noted for its fertility and being also the centre of the sugar industry. The whole area is divided into four sections, namely Ako, Kyoshito, Tainan and the Kohekirin sections. The locality is well irrigated and is best suited for the cultivation of sugar cane. The area of the plantations already under cultivation by the natives is over 7,000 *ko*, the whole of the raw material being supplied under contract to the company. The total area for the planting of sugar cane is over 76,000 *ko*, but the area planted with cane can be increased to several times the present extent as the manufacturing capacity of the company is increased. The company owns two agricultural farms, one at Kyoshito and the other at Kohekirin, as well as eight factories, and is also interested in the culture of sugar cane, having imported the best varieties from abroad. The Kyoshito agricultural farm is situated in the Kyoshito district, and has an area of 1,428 *ko*, the whole of which is planted with sugar cane, and part being irrigated by means of pumps. The Kohekirin farm is situated near the factory of the same name, and has an area of 2,989 *ko*. The plantation formerly consisted of paddy fields, the rice from which was harvested twice a year. The whole country is perfectly level and is well suited for farming on a large scale, and also has the advantage of suitability for continual cultivation, the land being very fertile and well watered. The company is at present engaged on an improved deep ploughing process with several sets of steam ploughs manufactured in England. The factories are located in eight places, and are all quite close to the port of Takao, the best harbour in the South of Formosa, the Kohekirin factory having direct communication by water with the harbour. The factory buildings are all constructed of strong iron frames, and the machinery installed is of the latest and most improved types. They have also appliances, specially suitable for Formosa, adopted in conformity with the experience gained by the company during the past few years. The following are some details of the factories:—

Factory.	Situation.	Raw Material compressing capacity per day.		Works started.
Kyoshito No. 1. Factory.	Kyoshito, Tainan.	650	tons	January, 1902.
Kyoshito No. 2. Factory.	"	450	"	January, 1908.
Kohekirin Factory.	Koshiken, Tainan,	1,000	"	December, 1908
Ako Factory.	Kiraisho, Ako,	1,200	"	November, 1908
Do.	extension.	1,600	"	Under construction.
Sharoken Factory.	Sharoken, Tainan.	1,000	"	" "
Wanri Factory.	Wanri, Tainan.	200	"	Already erected.
Alcohol Factory.	Kyoshito, Tainan.	......	"	April, 1908.
Alcohol No. 2. Factory.	At present under construction.	......	"	....

The quantity of sugar-cane which is worked at present is the above factories is enormous, the total amount of raw material compressed being 3,500 tons per day and 450,000 tons for one term extending from December to April of the following year. The output of sugar is over 50,000 tons. In the event of the extension works at Ako and the new factory at Sharoken being completed, and if worked at full load, it will not be a difficult matter to increase the output to 90,000 tons of sugar per year. In order to effect economy in freight of the raw material and the manufactured product, the company has constructed miles of railways for each factory; and has also many locomotives and hundreds of cars for transporting the cane. Telephones have also been installed. The railways are also utilised for general passenger and freight traffic, the Ako line being connected with the Formosan Government's Railway at the Kyukyokudo terminus. In regard to the Ako line, the transportation of over 300,000 piculs of rice and cereals is carried out by the line in one year, so that the income from the passenger and freight traffic is expected to form a considerable source of revenue to the company. The mileage of special railways of the company within each respective area is as follows:—

	Total length.	
Kyoshito Section	39	miles.
Kohekirin ,, ...	23	,,
Ako ,, ...	135	,,
Tainan ,, ...	62	,,
	259	

The capital, reserve fund, etc., of the company are as follows:—

Capital	Y12,000,000
Paid-up Capital	10,402,500
Reserve Fund	1,347,300
Last Dividend	14% per annum.

Ever since its establishment, the company has been paying careful attention to the improvement of the quality of the sugar-cane in its plantations, and these efforts have been attended with success, so that at present the inferior qualities have become entirely extinct.

When the company was inaugurated it was honoured by the Imperial Household Department who subscribed for 1,000 shares. Also, in 1907, when its capital was increased the Imperial Household Department subscribed for 8,000 shares, so that at the present time the total number of shares owned by the Imperial Family amounts to 9,000. On the completion of the Trans Formosan Government Railway in 1908 His Imperial Highness Prince Kan-in attended the function, and the company was also honoured by a visit from his Highness at the Kyoshito factory and the Kohekirin Agricultural Farm.

Chairman:—Shiro Fujita, Esq.

Managing Directors: Teijiro Yamamoto, Esq.; Tadamichi Takechi, Esq.; Taro Masuda, Esq.

Director: Tozaburo Suzuki, Esq.

Auditors: Teikin Okamoto, Esq.; Kinzaburo Kada, Esq.

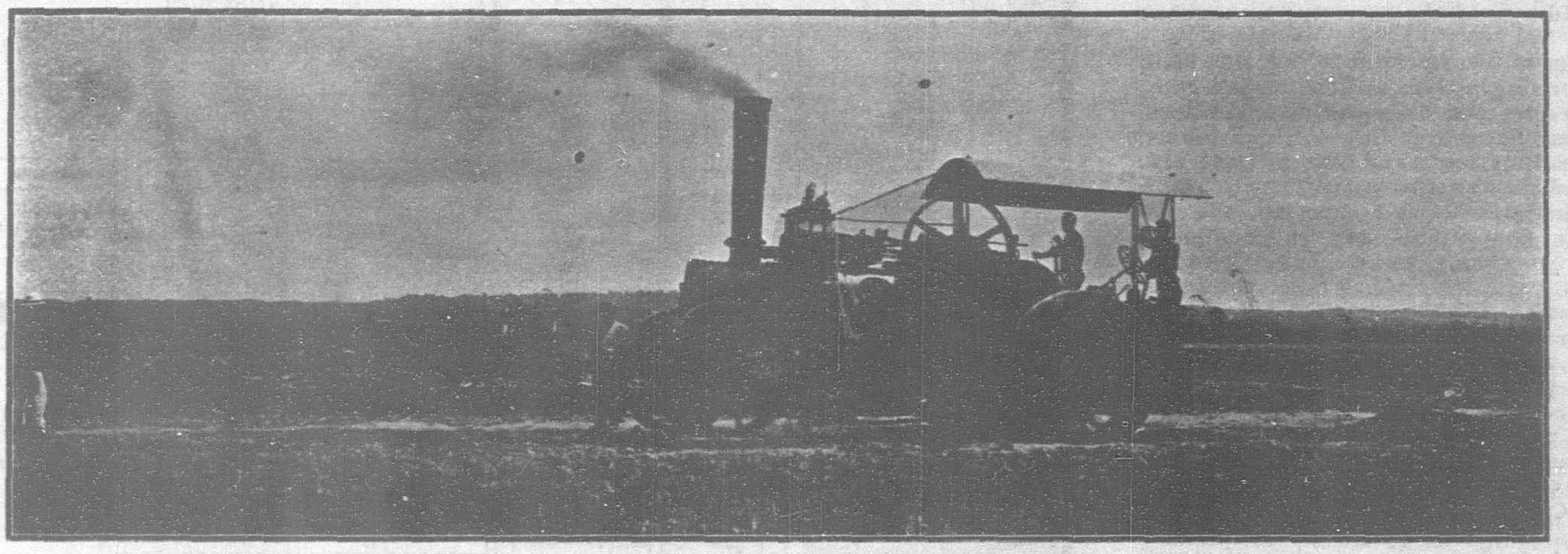
Advisors: Takashi Masuda, Esq.; R. W. Irwin, Esq.

YENSUIKO SEITO KABUSHIKI KAISHA

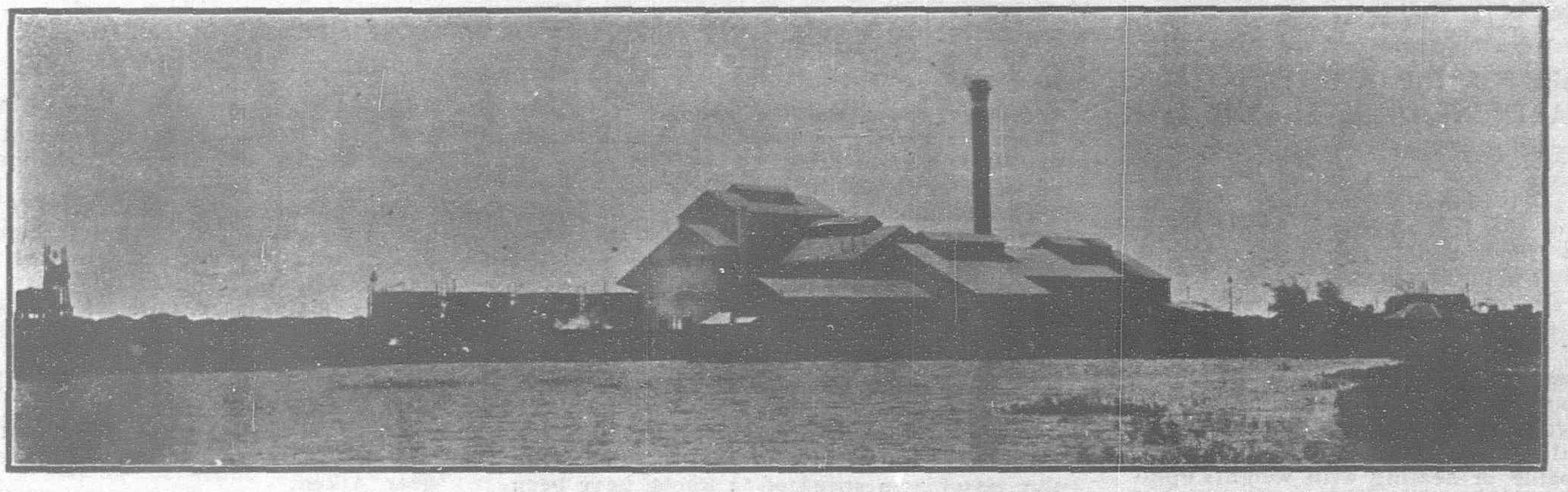
(THE YENSUIKO SUGAR MANUFACTURING CO., LTD.)

The Formosan Government-General, after the annexation of the island by Japan, adopted the policy of the protection of the sugar industry, on account of the fitness of the island for sugar-cane cultivation on the one hand, and on the other hand taking into consideration the probable demand in future for sugar. The regulations for the encouragement of the sugar industry were duly promulgated and a Provisional Sugar Administration Bureau was inaugurated in 1902, and ever since that time very careful attention has been paid to both the agricultural and manufacturing sides of the industry. In 1903, the Yensuiko Sugar Manufacturing Company was established, with a capital of Y300,000 by Mr. Osetsuno with more than 1,700 natives of the island. This concern, which was afterwards reconstructed, was the predecessor of the present company. It was in fact inaugurated on the advice of Mr. Murakami, chief of Yensuiko Administration Office at the time, at the instance of the late General Kodama, the Governor-General, and Baron Goto, Chief of the Civil Administration Bureau. Mr. Soichi Hori, chief of the Tainan Branch of the Sugar Administration Bureau, resigned his post and entered the company as chief engineer. It spite of that gentleman's strenuous and untiring efforts, the fortunes of the company fell into a very depressed condition on account of depreciation in the price of general merchandise and of sugar as the result of the Russo Japanese war, which was still raging at the time. The present managing director, Mr. Maki, joined the company as manager, and in co-operation with Mr. Hori, succeeded in readjusting its affairs, refunding the losses of the preceding term. Moreover, the products of the company gradually gaining a fair reputation in the market, business generally showed considerable improvement. Upon the conclusion of the war, great activity was experienced in industrial circles and a marked improvement was seen in the company's business. The sugar industry of Formosa was at this time attracting the attention of the people of the mother country, and the present company was established with an increased capital of Y5,000,000; it took over the entire undertakings of the former company, a great extension of business being immediately shown. As the result of the protection afforded, direct as well as indirect, by the Government-General and the able management of the company's officials, the business of the company has been very satisfactory and it is at present in a prosperous condition.

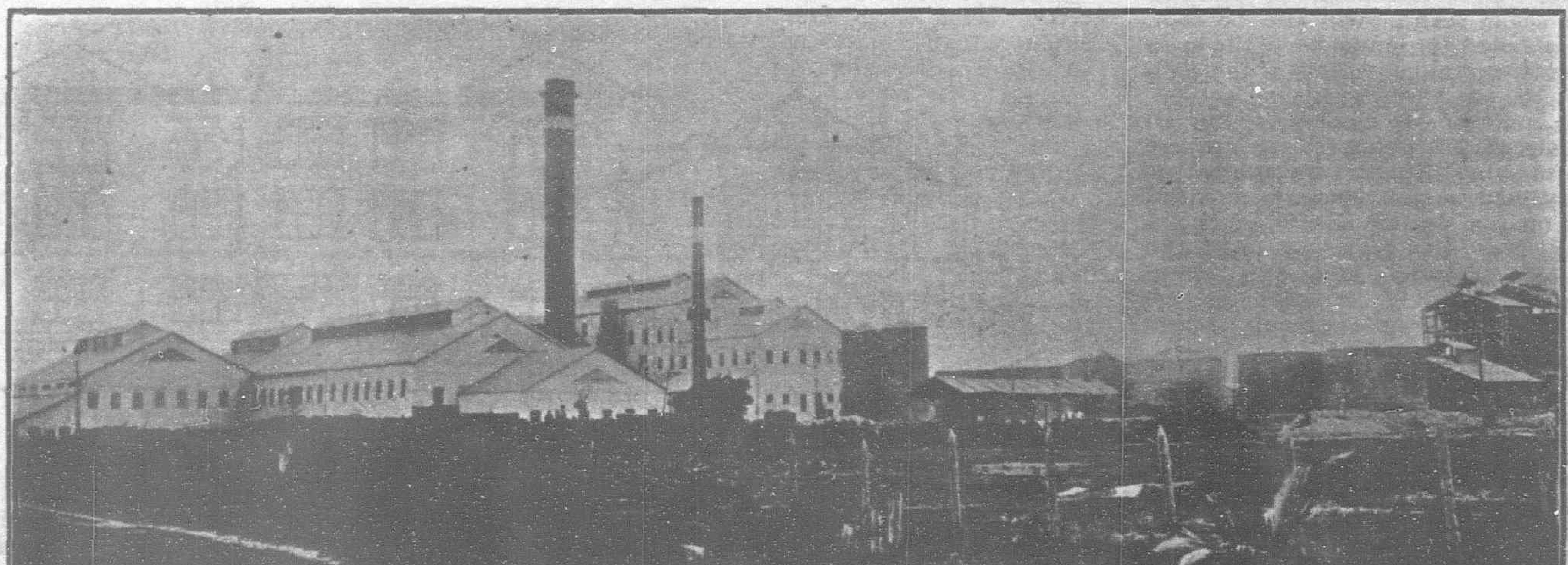
The No. 1 factory of the company, with a capacity of 350 tons per day, was extended in order to meet the increased demand, and in addition a second factory was newly set up with a capacity of 1,000 tons. The machinery installed is all of the latest type, and a special railway system has been constructed for the transportation of raw materials. The company is now entirely free from Government protection and supervision, its business being conducted on absolutely independent lines. The following figures show the present condition of the company:—



FOWLER STEAM CABLE PLOUGH ON THE KOHEKIRU PLANTATION OF THE TAIWAN SUGAR COMPANY



SHAROKEN MILL OF THE TAIWAN SUGAR COMPANY



REAR VIEW OF THE AKO MILL, SHOWING MOLASSES STORAGE TANKS AND DISTILLERY

Capital	Y5,000,000
Paid-up capital	2,000,000
Capacity	1,550 tons.
Railway	66.47 miles.
Farms	33,638 *ko.*
Sugar plantations	2,616 ,,
Latest dividend	20%

The yearly output of the company is at present about 18,000,000 lbs., which is, however, only a portion of the total producing capacity, it being possible to considerably increase the output of the factories if worked at full load. Two varieties of sugar, Refined Crystal and White, are manufactured, the brands being "ESB," "EBB," and "ESW." They are intended for the home market as well as Manchuria, Korea and Southern China. Recently, as the result of the Sugar Consumption Tax, there has been an increasing demand for the refined sugar of the company, the quality of which is in no way inferior to the same of Java, and it being held in high repute in the market. From 1910 two new varieties of white sugar manufactured by a special process originated by the company will be put on the market, branded

YOUNG MEN'S CHRISTIAN ASSOCIATION'S NEW BUILDING IN PEKING

The contribution of $60,000 made by Mr. John Wanamaker to the International Committee of the Young Men's Christian Associations to be utilized in the construction of a large building for the headquarters of the association in Peking marks a new era in the Princeton Work in the Chinese capital. The building proposed will be a model for all future buildings of the society throughout China.

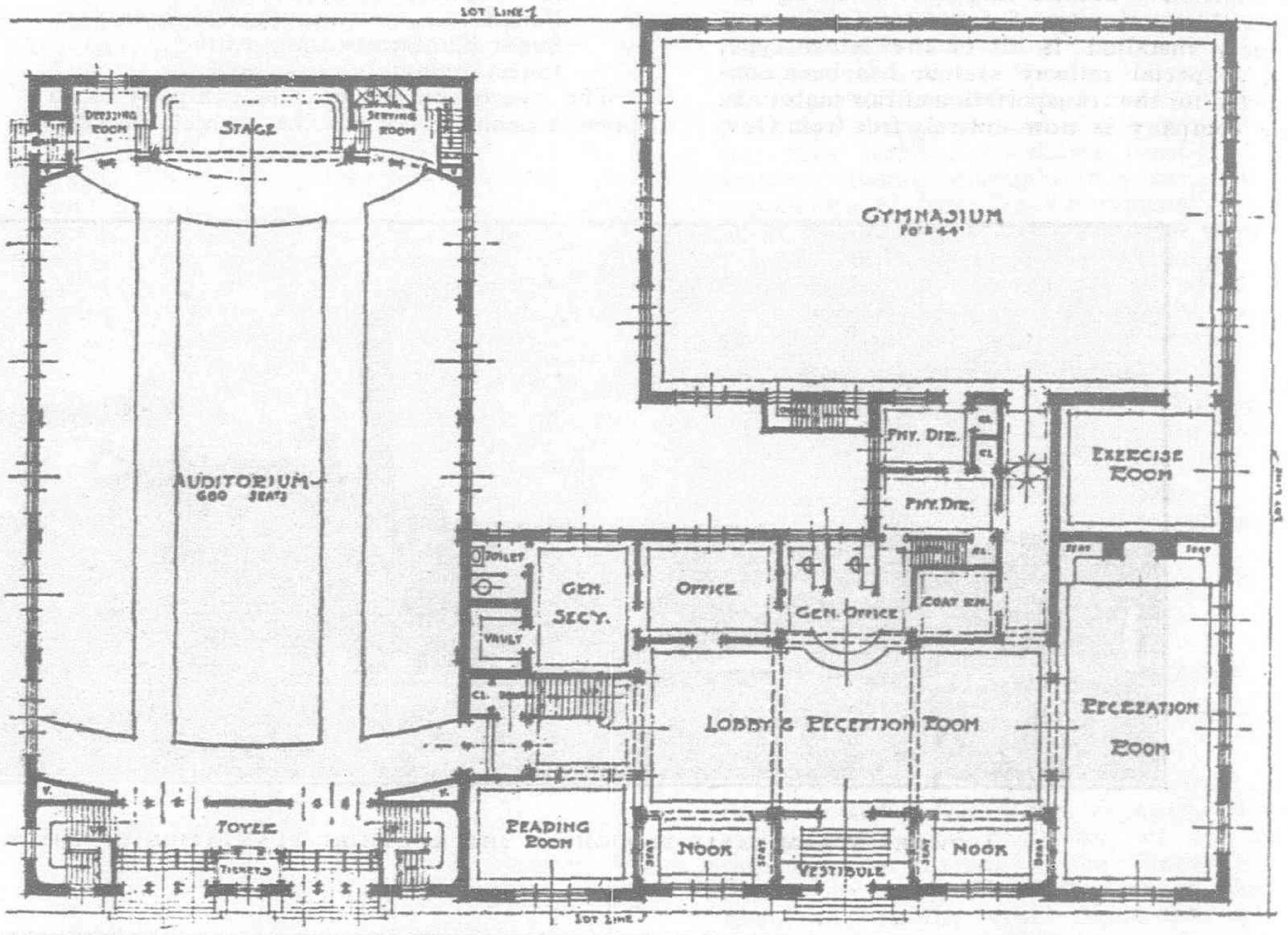
It will be a two-storey building, the main floor comprising a large auditorium and gymnasium, besides the offices of the directors, with recreation, exercise and reception rooms. A large reading room and library will also be included in the plans.

The architect who will supervise the construction is now on his way and a physical director from among recent Princeton graduates has been selected to take charge of the gymnasium.

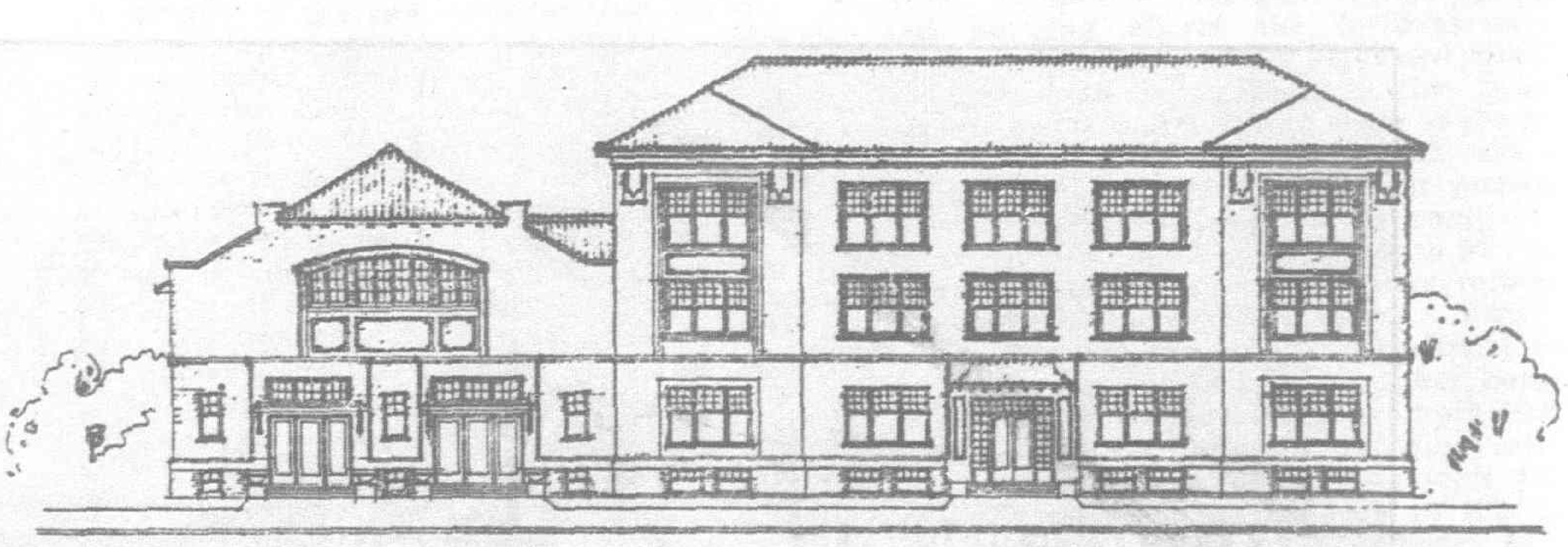
Accompanying this sketch is a floor plan and front elevation of this new structure appearing in a recent bulletin.

The Princeton Work in Peking during the year 1910 proved very encouraging. The financial statement shows a total of receipts of $6,585.35. Liberal support was received from the Chinese and foreign residents in Peking.

A special fund for the erection of secretarial residences is being raised and out of $13,800 required $10,750 has already been contributed. It is expected that the residences will be built simultaneously with the main Y. M. C. A. Building.



MAIN FLOOR PLAN OF PROPOSED PEKING BUILDING.



FRONT ELEVATION, Y. M. C. A. BUILDING AT PEKING

NEW VESSEL FOR THE QUARTERMASTER'S DEPARTMENT OF U. S. ARMY

The Taikoo Dockyard & Engineering Co. of Hongkong have just completed a finely modelled steel twin-screw steamer built to the order of the United States Army, Quartermaster's Department. The vessel is named the "Miley" and is 140 feet overall by 26 feet beam and 13 feet 6" moulded depth, and has been built equal to the highest classification of Lloyd's Society.

The vessel has a continuous main deck, with a long shade deck, two steel masts, and is rigged as a fore and aft schooner. A powerful steam winch is fitted at the fore hatch, capable of dealing with weights up to 10 tons, while in the fore part of the vessel a capable steam warping windlass is fitted. There are two large insulated compartments in the fore hold fitted up for the carrying of fresh meat and perishable goods.

The accommodation for passengers and officers is a special feature of the vessel, the rooms being spacious and well fitted up, panelled in teak and finished in glossed white. The saloon is handsomely finished in polished teak, light brown leather cushions and curtains to match. Special bathrooms, fitted with showers, have been installed for passengers, officers, crew and soldiers.

Triple-expansion engines of the builders' own make, and two boilers, capable of driving the vessel at a speed of 12 knots, have been fitted. Alley and McLellan's patent steam steering gear has also been installed.

The vessel is lighted throughout by electricity, and has a powerful searchlight fitted over the wheel house.

On the trial trip the vessel easily maintained her guaranteed speed, the engines and auxiliaries working very smoothly.

LARGE CONTRACT SECURED BY MESSRS J. G. WHITE & CO.

The Augusta Railway & Electric Company and the Augusta-Aiken Railway Company of Augusta, Georgia, have arranged for the following extensions and improvements to their power houses and systems: Estimated cost, approximately $500,000.

The power house extension is planned for two 2,500 K. W. steam turbines, one of which, with the necessary boilers and auxiliaries, will be installed this year. A seven and one-half (7-½) mile transmission line will be built from the power house in Augusta to the power house of the Augusta-Aiken Railway Company near Clearwater, S. C., and a 500 K. W. motor generator set will be installed at this point, and a 300 K. W. set in the present substation near Aiken.

Under an arrangement with the City, the wires in the City of Augusta will be placed underground on three of the principal streets, involving the laying of about three (3) miles of conduits. In connection with this underground work, the Company will also install ornamental poles on Broad Street, Augusta, for carrying its trolley wires and feeders and also clusters of tungsten lamps for street lighting. An extension of about one mile of single track will be made and the reconstruction of a large amount of the present tracks is planned.

The contract for the above work has been

"(Daihaku) A" and "(Daihaku) B," and raw material for sugar refining will also be sold, this being intended for refineries on the main island. The immediate prospects of the company, therefore, are very promising.

The total number of employees and labourers is over 400, of which 148 are Japanese and 258 Formosans. Houses are allotted to each of them, and a club house is provided for their recreation during leisure hours. A system of pensions is in vogue for those who retire from the company's service, a certain part of the profits being set apart for the pension fund, this being a special feature of the company's organization.

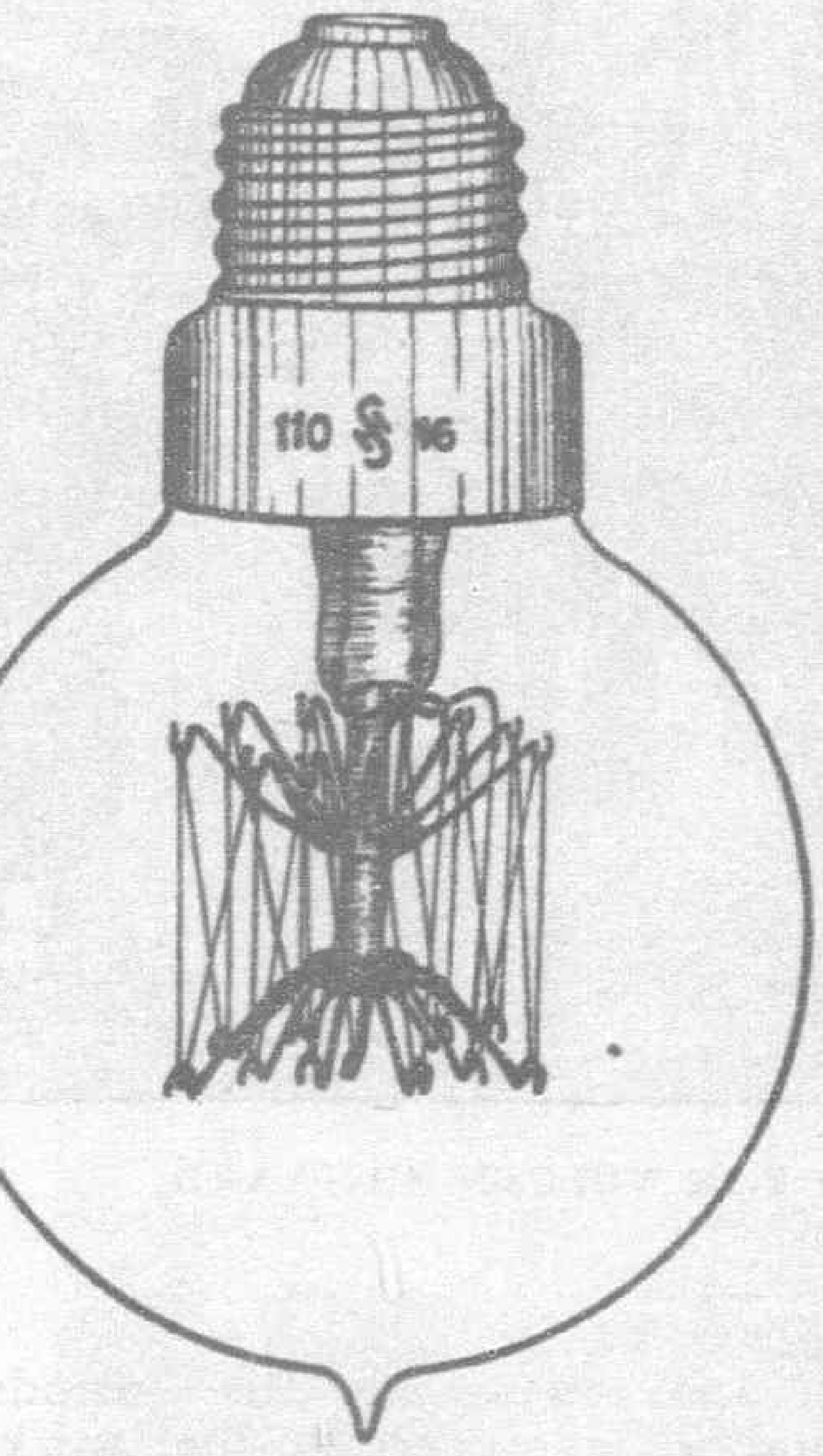
The present members of the Board of Directors are as follows, the Directors being all actively engaged in the thorough development of the company's business. Although the company may not be in point of magnitude so extensive as some, the great merit of its having been able to produce goods of the best quality and serving as a model for other concerns should not be overlooked:—

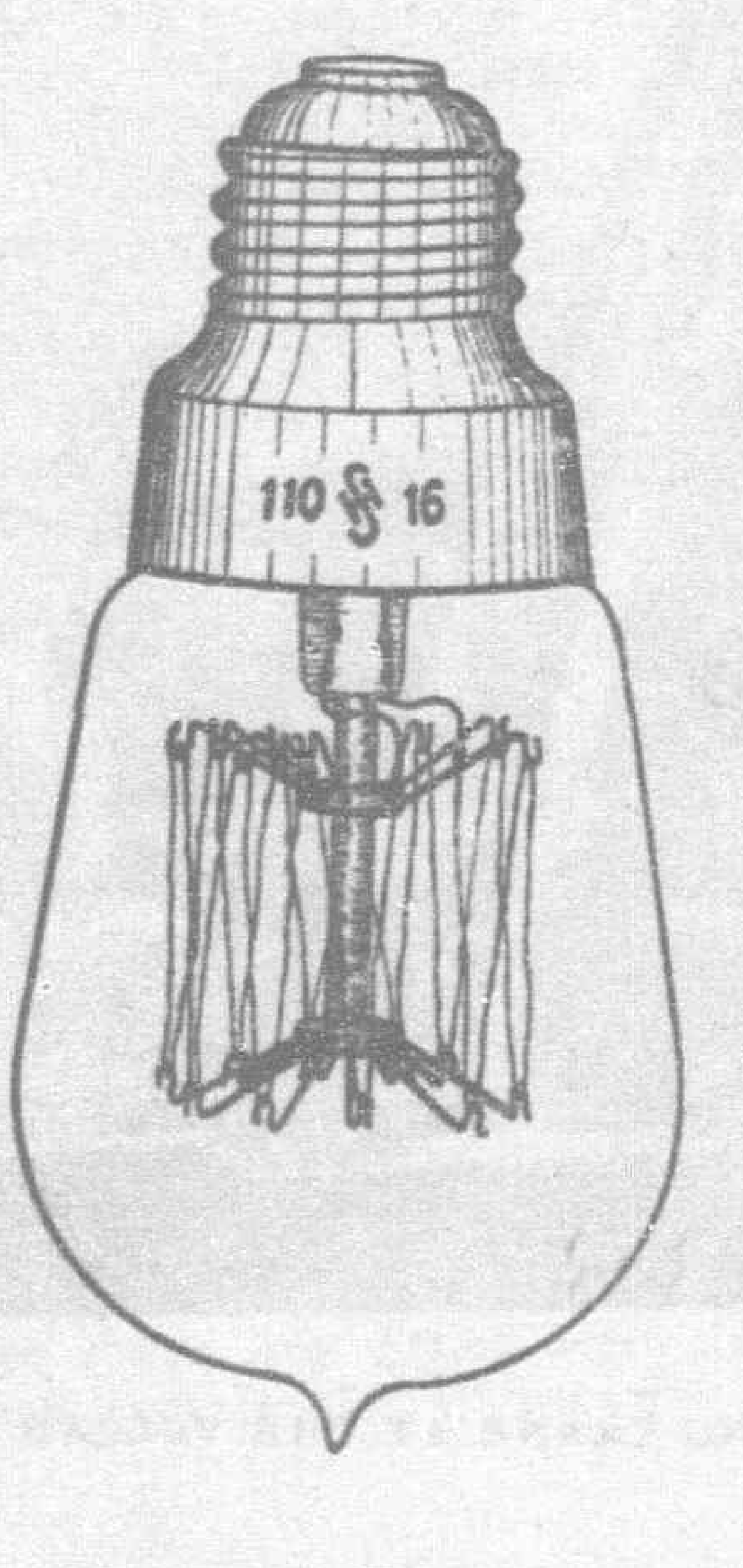
President: Taiji Arai, Esq.
Managing Director: Tetsu Maki, Esq.
Directors: Soichi Hori, Esq.; Shidzuo Sakai, Esq ; Saburosuke Fujisaki, Esq.; Tatsuji Ando, Esq.
Auditors: Sojuro Iwasaki, Esq.; Susumu Murakami, Esq.; Kobei Abe, Esq.; Ryu Shin Gaku, Esq.
Chief Engineer: Yuji Okada, Esq.

awarded to J. G. White & Co., Engineers and Contractors, 43 Exchange Place, New York.

TANTALUM RAILWAY LAMP TESTS

An investigation has been carried out by the Chicago Railways Company in regard to "Tantalum" lamps, the object being to ascertain the proper allowance for renewals, energy, economy and correct voltage rating of lamps for street car service. Attention was paid to the current consumption of various types of lamps under actual running conditions. It was shown that in the case of a car burning 25 16 c.p. "Tantalum" lamps, as compared with a similar equipment of carbon lamps, there was a saving of 1,301 kw.-hours in energy on the basis of 1,800 hours lamp burning a year, while a test extending over 600 car-months showed the renewals of carbon-lamps to be 4,269 per car-month and of "Tantalum" lamps 2.21 per car-month. The "Electric Railway Journal", in analysing the results, shows that there was an average saving of 2.5d per car-day on the basis of 1,800 hours of illumination per car-year, and that when "Tantalum" lamps have been installed in all the cars operated by the company there will be a saving of about £5,000 a year. The higher cost of "Tantalum" lamps over carbon lamps is claimed to be balanced at the end of the first year by the longer life of the metal filament. The saving in the current consumption is important in the case of the Chicago Railways, as the Company purchase the power and pay a premium on peak loads.





Development of Visayan Trade and Industries

Philippine trade reports during the last two years show a very remarkable increase in volume both in imports and exports due largely to the operation of the Payne Bill, and from present indications the percentages of increase annually will continue. The total value of imports during the fiscal year 1910, according to customs reports, was $37,061,925, U. S. C., as against $27,794,482 in 1909, and the exports for 1910 were valued at $39,886,852, U. S. C., as against $31,044,158 in 1909. The total volume of trade for 1910 amounted to $76,948,777, U. S. C., as against $59,038,940 in 1909, a gain of $17,909,537. While the bulk of the trade is controlled by Manila, the ports of Iloilo and Cebu in the Visayas are moving rapidly to the fore. In 1909 Iloilo imported goods to the value of $2,106,685 and exported to the value of $3,267,310 a total volume of trade for that fiscal year of $5,374,995. In 1910 Iloilo imported to the value of $2,286,285 and exported the same year $5,413,020, a total volume of trade valued at $7,699,305, an increase in one year of $2,314,310. In 1909 Cebu imported goods to the value of $2,232,619 and exported to the value of $5,678,523 making a total volume of trade of $7,911,24[illegible]. In 1910 Cebu imported $2,730,379 worth of goods and exported $6,922,169 making a total volume for the year of $9,152,548, or an increase over the previous year of $1,241,304.

During the current fiscal year the increase in trade continues. For the nine months ended March 31, 1911, Iloilo's total volume of trade was $6,821,416 as against $5,583,205 for the corresponding nine months of the fiscal year 1910, an increase of $1,238,211. When it is understood that the greater portion of sugar crop was held in Iloilo storehouses until after March 31, the figures denoting increase over the previous term fall short of the truth.

The same may be said of Cebu. During the nine months ended March 31, 1911, the total volume of trade reached $8,095,854 as against $6,937,295 during the corresponding period in the fiscal year 1910, an increase of $1,158,559.

In both ports there is every evidence that the returns for the fiscal year will show a much greater percentage of increase over the previous year than any other annual return.

While the Payne Bill may well be credited with giving Iloilo a market for its sugar and thus increased the purchasing power of Negros and Panay, another influence has been steadily working for the last two years with the object in view of making it possible for the farmers and businessmen to participate in the phenomenal prosperity that has come to the Visayas. Without transportation facilities, large tracts of rich agricultural lands remained unproductive and all the Payne Bills that might be enacted would not induce the farmer to invade these lands unless he were assured that it were possible to get his products to market.

We refer to the operations of the Philippine Railway Company in Panay and Cebu. When this company undertook to construct modern lines of railway in these two Islands, its officials were not sanguine of immediate success. They realized, as did the pioneer railway lines that invaded America's great west, that the uncultivated country traversed must be settled up and returns in products for industry realized before there could be hope for carrier dividends. The Philippine Railway Co. had, however, the advantage over the American lines, in that they had the benefit of the latter's experience, and were able to proceed to the encouragement of native settlers along the line of railway in an intelligent, effective manner. The company did not expect that there would be a net revenue over and above all charges fixed or otherwise within ten years and the officials proceeded to inaugurate a constructive policy along their lines; that has brought returns anticipating expectations by more than five years.

In Cebu the company investigated the soil conditions and proceeded to encourage the planting of maguey. In this work the Philippine Agricultural Bureau gave every assistance. The farmers were instructed and encouraged in producing the best quality of plant and the company placed at their disposal a stripping machine free of charge at the different stations and sidings along the line to demonstrate the advantages of modern machinery. The result has been very satisfactory. Large areas heretofore unproductive were planted in maguey and last year's export returns show an export of this product alone amounting to $231,688 U. S. C.

In the Island of Panay the Company has established an experimental farm at Passi, a point on the railway almost in the center of the great fertile valley traversed.

The adaptability of the soil and climate to successful cultivation of tobacco and bush cotton was here demonstrated and while these industries are in their infancy, there is growing interest among the Filipinos in watching their development.

Active investigation and experimentation on this farm is continual. The latest innovation is the introduction of California grapes, oranges, and lemons and instruction as to the best methods of cultivation. Other fruits will be introduced to supersede the wild uncultivated product of the islands, and with such encouragement and assistance as the railway is now giving the natives, Manila may soon expect to realize a fruit supply of superior quality from Panay.

It must be remembered that the territory traversed by the railway was all virgin land, with the exception of a small fringe here and there in the vicinity of the coast and small rivers where markets were available by water transportation. As the construction of the railway proceeded, these lands were rapidly taken up, and from the evidence available of successful effort during the last two years it is only a matter of a few years more when this valley will represent the greater part of the agricultural wealth of Panay. As for instance, the output of tobacco this season was five times as great as ever before and the sugar increased 300%. The area of rice planted was largely increased and with the advance of the railway two modern rice mills were installed on this new agricultural reclamation. The same may be said of the corn crop.

All this was no easy task. It required great tact and considerate dealing with the Filipinos. It took time to win their confidence and patience and perseverance to keep it, but once the benefits of modern methods of cultivation and better facilities for transportations were realized, it was easy sailing.

And the company is already reaping a substantial benefit. The estimated period to elapse before dividends may be expected has almost been cut in two, and there are those more optimistic. When it is realized that the lines both in Cebu and Iloilo were constructed largely through virgin areas and those cultivated, inhabited by natives whose agricultural methods were no improvement on those of the ancient Egyptians, the progress made has been phenomenal.

The line in Cebu went into commercial operation on July 1, 1909, and it has already developed its carrying revenue to a point where it now covers operating expenses and there is a fair sum available to apply to interest on bonds. For the period ended March 31, 1911, the net operating revenue increased over 100% over the corresponding term for 1910. For the month of March, 1911, alone, the increase over the corresponding period, 1910, was over 50%.

In Panay for the period ended March 31, 1911, the total increase in traffic earnings was over 100%. When it is remembered that this line is not yet in commercial operation and that only the minimum of development along this railway has been accomplished, this enormous increase is remarkable. Indeed, there is every reason to believe that when the line is once operating commercially, it will not only pay all the operating expense, but immediately make an impression on the interest on bonds. As a compliment to the promoters of this enterprise and to the Philippine Government who gave it encouragement, even the most pessimistic are beginning to realize that the Visayan railway lines will prove a most advantageous investment, and at the same time encourage many blades of grass to grow where none grew previously in those fertile islands, bringing to the inhabitants an area of prosperity of which they never dared even dream.

REVIEWS

Drop Forging, Die Sinking and Machine Forming of Steel—by Joseph V. Woodworth and issued from the presses of The Norman W. Henley Publishing Co., New York. Price $2.50.

This is a practical treatise on the hot and cold machine forming of steel and iron into finished shapes and comprises much valuable practical information having reference to the tools, dies and machinery used in the manufacture of duplicate forgings and interchangeable hot and cold pressed parts from bar and sheet metal.

"*It Tickled Him*," by George Hoyt Allen.

This unique volume contains in narrative form a review of the author's experiences during a trip round the world in the humorist's best vein. Mr. Allen was discovered by *La Follette's Weekly* and was sent by that periodical to gather impressions for the magazine in many climes. Included in this work are the author's experiences in all the ports of the Far East so that the book may give a few hours entertainment to the residents of those cities to see themselves through the kindly specs of Mr. Allen.

Cement Age and Concrete Engineering Consolidated.—Cement manufacturers, architects, engineers and contractors will be interested in the announcement that *Cement Age*, of New York, and *Concrete Engineering*, of Cleveland, two of the leading monthly publications in the cement field, have been consolidated. *Cement Age*, which was established in 1904, has been issued under the editorship of Mr. Robert W. Lesley, Vice-President of the American Society for Testing Materials, and an Associate of the American Society of Civil Engineers, who is also one of the most prominent figures in the cement industry in this country. *Cement Age* has covered the popular features of cement construction, as well as the engineering and manufacturing side of the industry, and *Concrete Engineering* has been especially devoted to that branch of the industry indicated by its title. Beginning whith the January 1911 issue, the two magazines will be consolidated under the title: "*Cement Age* with which is combined *Concrete Engineering*". The magazine will be slightly larger than the present size of *Cement Age*, and will have a type page 6 × 9 inches, thus retaining the distinctive magazine form which has been a popular feature of the older publication.

From Will Irwin's "The Awakening of the American Business Man" in the April Century.

Correlative with this task system, an outgrowth of it, is the scientific selection of men. That few make their choice of vocation from natural bent is an axiom of economics. Born artists there are, born mechanics, born sailors, born builders; these few are driven by something within them to their best lines of endeavor. The rest are pawns of destiny. The average bricklayer, for example, is a bricklayer because that was his father's trade, because friends of the family offered him a good position as an apprentice, or because, when he first plunged into the world, he happened to find work on a new building. No one, he least of all, has taken natural ability much into account. Yet so subtly are men differentiated, and so wide are the processes of industry, that almost every man has his special task in the world, could he but find it.

The Vulcan Shipyard at Hamburg

The branch establishment of the "Vulcan" Shipyard and Engine Works, of Stettin-Bredow, commenced operations about the middle of 1909. The number of the large Hamburg Shipyards was thereby increased by a very prominent concern, and it will, perhaps, interest the reader to learn something about this important establishment and the main yard at Bredow.

VISIT OF H. I. H. PRINCE TSAI HSUN TO THE VULCAN SHIPYARD

In 1851, when the first steps were taken in Germany to build iron steamers and sailing ships, two enterprising citizens of Hamburg—Franz Dietrich Früchtenicht and Franz Wilhelm Brock—established at the village of Bredow near Stettin a small shipyard under the firm of Früchtenicht & Brock. Their business was so successful that already, six years later, the concern has been turned into a joint stock company—the Stettiner Maschinenbau-Actiengesellschaft Vulcan. As a result of the continuous energetic management, and owing to the introduction of locomotive engineering, the works had to be steadily enlarged. Nevertheless, the fact that the German shipbuilding industry was as yet dependent on England with respect to the supply of building materials, auxiliary appliances and fittings, still hampered to a certain extent the free development of this industry. It was not until the German iron and steel industry undertook the production of the half-manufactured and ready-made articles required by the shipbuilder, that a thorough revolution set in and enabled the German shipyards to develop into shipyards and engine works on a grand scale and fully

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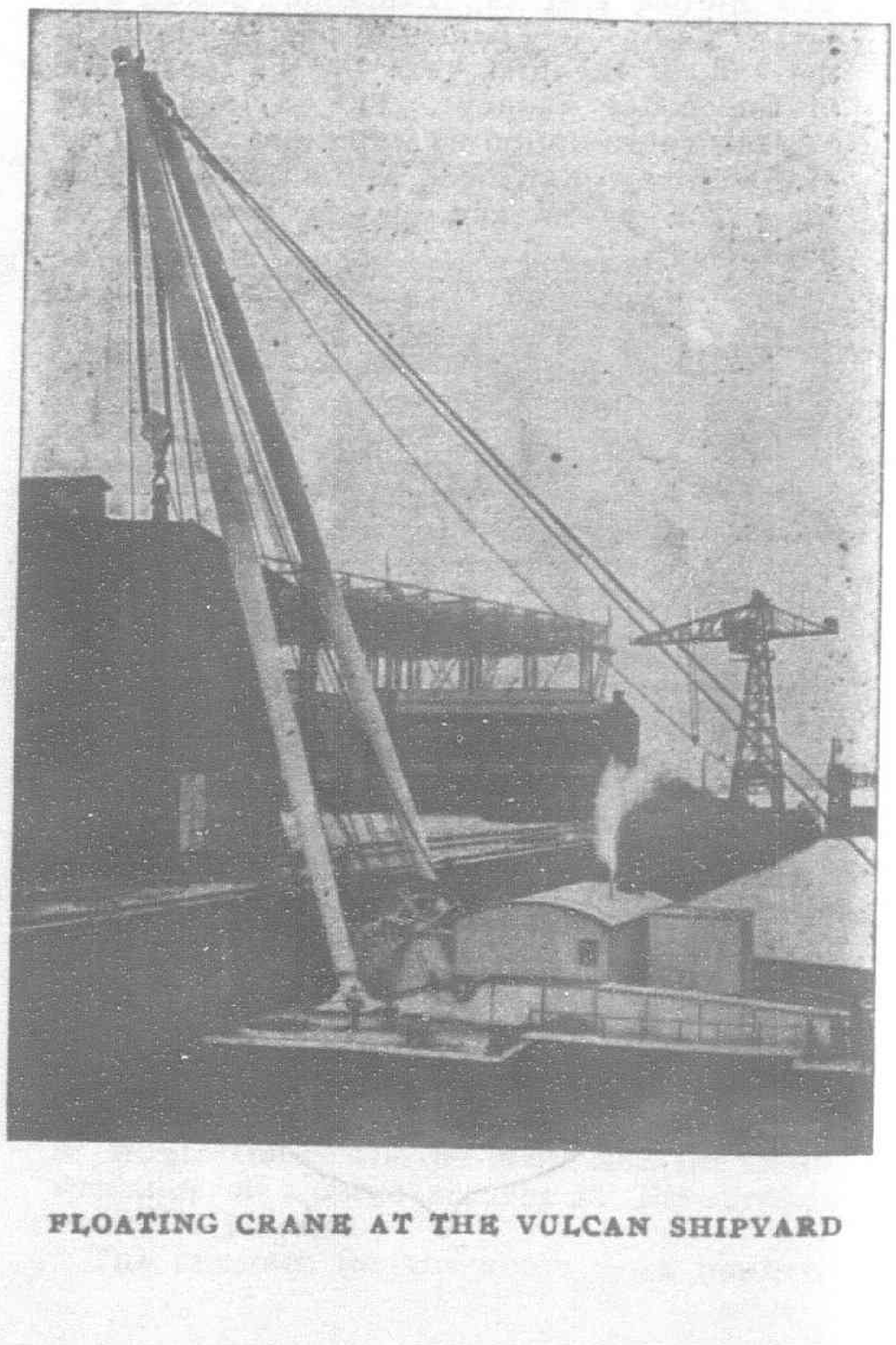
The Manila Times Second Annual Edition, edited by Eleanor Franklin Egan and issued from the presses of the Times Publishing Co. of Manila is one of the most strikingly comprehensive illustrated special editions yet published devoted exclusively to the potentialities of the Philippines. The number if profusely illustrated with reproductions os photographs of scenes in the Philippines portraying native life and customs and presenting in attractive form the natural beauties of America's Farthest Frontier.

The extensive developments of public works, the opening of railways, together with the impetus given native industries by the liberal policy of the American Government is splendidly set forth. Typographically, the issue is a credit to the publishers and compares favorably with the most modern pictorial magazine of the day.

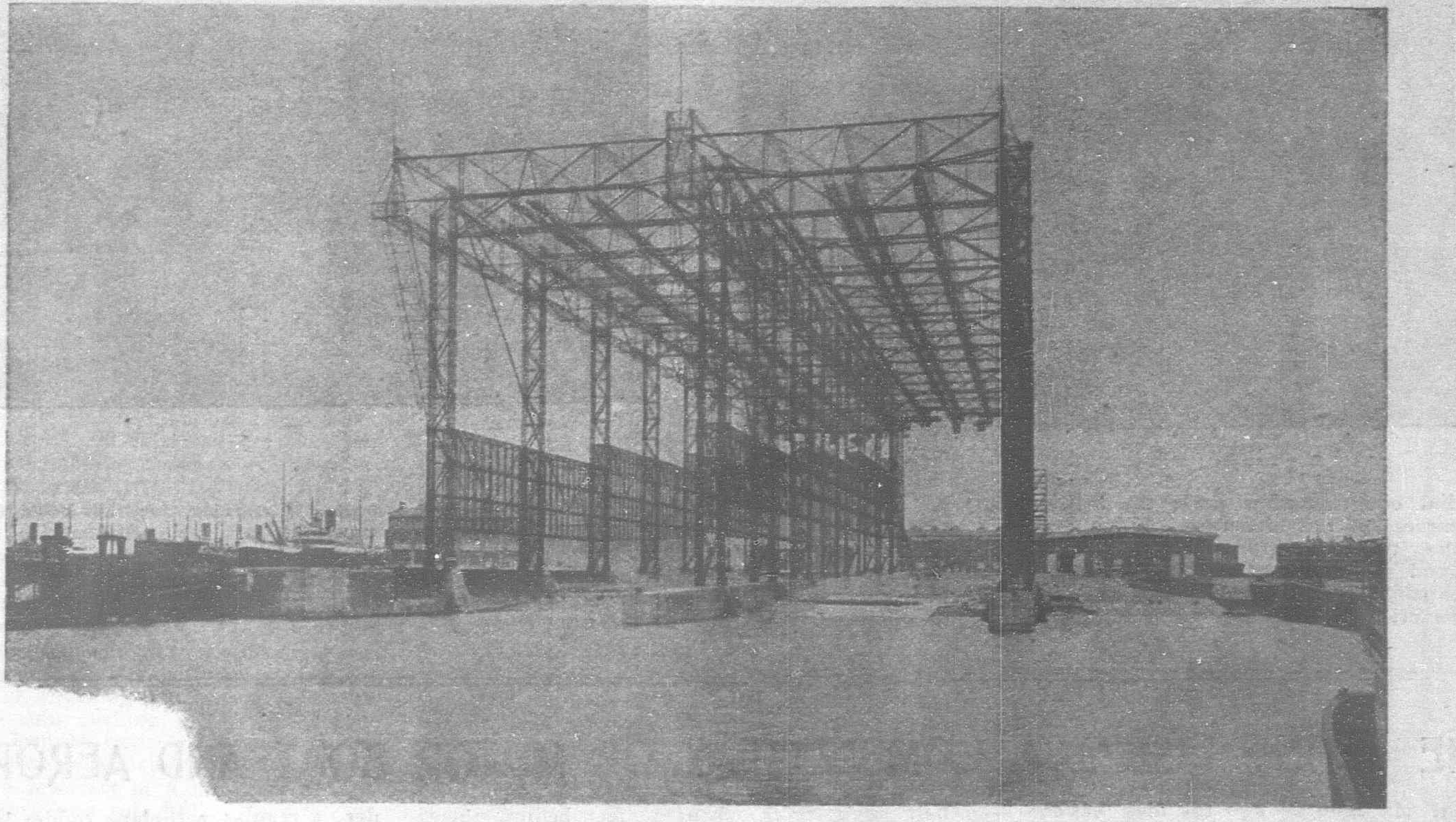
The number has been widely circulated and will certainly aid greatly in directing more favorable attention to the islands and serve in large measure to remove much of the prejudice that only total ignorance of the rich promise to industry and well directed effort for which the islands stand, makes possible.

Among the leading articles are "The New Philippines" by Martin Egan; "Change in Trade Channels" by Col. H. B. McCoy; "The March of Empire Westward to the East," by Harold M. Pitt; "Progress of Scientific Research" by Dr. W. E. Musgrave; "Medical Education in the Philippines," by Dr. Paul C. Freer; "The Philippine General Hospital", by Dr. John R. McDill; "Medieval and Modern Manila," by Lewis Harsant; "Education in the Philippines," by Frank R. White, and many other articles covering the industries and resources of America's richest insular possession.



FLOATING CRANE AT THE VULCAN SHIPYARD

equal to the English yards. Among the German shipyards the "Vulcan" to day holds a leading place. Since its establishment the Company turned out over 300 ships and more than 2500 locomotives for Germany and abroad, besides numerous lighters, dredges, floating cranes, pontoons, dock gates, stationary engines, turbines and boilers.



SHIPBUILDING SLIPS, VULCAN SHIPYARD

Among the constructions for the German mercantile marine, it is especially the express steamers and imperial mail steamers—besides the freight and passenger steamers—which have produced for the "Vulcan" its prominent position in the shipbuilding industry of the world. World-famed among these masterpieces of naval engineering are the express steamers "Kaiser Wilhelm der Grosse," "Kronprinz Wilhelm," "Kaiser Wilhelm II" "Kronprinzessin Cecile," and the twin-screw freight and passenger steamer "George Washington" (the largest of the German mercantile fleet, displacement 35,850 tons) all built for the Norddeutscher Lloyd, of Bremen. The "George Washington" represents quite a new type of steamer. Typical among the ships built for the Hamburg-American Line are the express steamer "Deutschland," the "Kaiserin Auguste Victoria" and the turbine steamer "Kaiser."

The achievements of the "Vulcan" in the construction of men-of-war have met with the entire approval of the German Emperor and the Naval Office. The company built for the German Navy.

9 battleships, among them H.M.S. "Mecklenburg," "Preussen," "Pommern" and "Rheinland."

5 protected cruisers.

6 second class cruisers, among them the "Hamburg," the "Lubeck," the "Stettin" and the "Mainz."

The latter three are fitted with turbines. Besides these vessels the "Vulcan" turned out a number of special type ships, among them H. M. Yacht "Hohenzollern."

Very successful was of late another branch of the Company's works, viz: the torpedo boat yard, where more than 25 torpedo boats—all fitted with A.E.G. turbines—were built for the German Navy. Of these, "V. 164" made the highest speed record hitherto attained, viz: 34.5 knots. But these home orders were not the only ones; the "Vulcan" true to its motto: "My field is the wide world," secured orders also from foreign navies and built numerous men-of-war of various types—from the heavy battleships to the swift, graceful torpedo boats—for Russia, Greece, Japan, China, Brazil, and Uruguay.

In due consideration of the progress made with the turbine system the "Vulcan" gave special attention to its construction, and the results obtained with turbines for the Navy and the mercantile marine are truly remarkable.

The launching conditions on the river Oder and the Baltic coast not being favourable for very large ships, the "Vulcan" company decided to establish a branch shipyard on the North Sea. After many preliminaries Hamburg was decided upon, as the conditions there were the most favorable as regards launching space and building sites. Negotiations with the Senate of Hamburg made it apparent that the authorities at Hamburg themselves expected a considerable profit from the opening of a branch shipyard of a company whose reputation was well established all over the world, and as the Hamburg Burghership was of like opinion, the contract was readily concluded.

The work of laying out and building the shipyard and the offices was undertaken with all possible speed, so that within less than three years the whole concern—the towering frameworks of the building slips of which are a typical feature of Hamburg Harbour—was completed and ready for operation.

On entering the main gate of the shipyard—which covers an area of 232,000 square metres and is intersected by normal gauge railway tracks—the visitor passes through the angle-bar and frame forge, the riggers' and carpenters' shops, the joiners' shops and the saw mill to the four gigantic building slips, all fitted with cranes, where ships of up to 1000 feet width can be constructed. From the building slips one passes through a workshop of 8,250 sq. metres floor space, containing the furnaces and the drawing loft, to the shipbuilding shop, the platestacks, covering an area of 10,000 sq. metres and fitted with a huge iron scaffolding on which run cranes, by which the material arriving by railway is rapidly conveyed to the adjoining workshops.

At the boiler forge and the copper smithy, as well as at the hammer forge, the painters' shop and the rivet store, in the engine workshops as well as at the electric central power station, everything is arranged according to the very latest methods. Especially up-to-date is the vast new hall for the construction of high power turbines, with adjoining power station, where the turbine plant for the battleship "Ersatz Heindall" is under construction. All workshops are fitted with electric travelling cranes and with all those appliances that ingenious engineers have devised for rational and cheap working.

The floating docks, immediately adjoining the shipyard, are fitted with perfectly independent power stations and are able to lift ships weighing up to 11,000 tons. The docks, too, are equipped with the most up-to-date mechanical appliances.

With a view to rapid and safe working, floating cranes and, on the quays, travelling tower cranes are available.

It is desirable that the Vulcan branch works at Hamburg should develop as favorably as the mother works at Stettin, and the

Company considered it a good omen that H. M. the German Emperor on the occasion of the opening of the new shipyard on June 21st, 1909, sent the following message to the president of the board of trustees:—

"On returning from an inspection of "the new Vulcan Yard, which magnificent and model establishment has given "me great pleasure, I express to you "and the Vulcan Company my most cordial congratulation upon the brilliant "success of the enterprise. I doubt not "that the new shipyard will justify the "good reputation of the Stettin Vulcan's "capability by further remarkable constructions, and propagate it in the interest of German shipbuilding and to the "satisfaction of your well-disposed

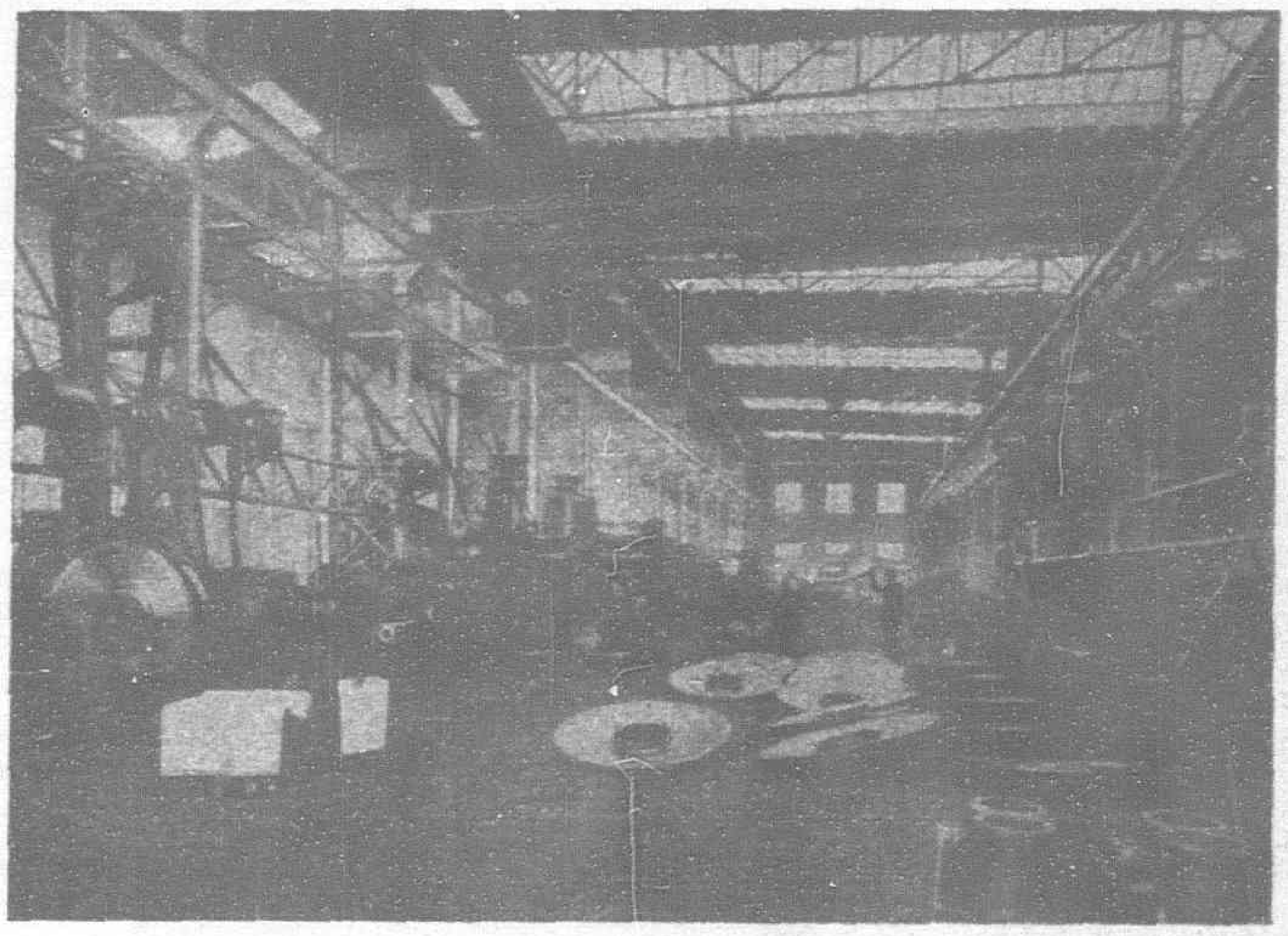
Wilhelm I. R."

The beginning is made. The ships at the quays and in the docks promise a good progress of the repairing business.

Amidst a veritable forest of scaffoldings the outlines of the battleship "Heimdall," an order from the German Imperial Navy, are already recognizable, whilst on the largest of the building slips the keel is being laid for a leviathan freight and passenger turbine steamer, the construction of which puts the capability of the young enterprise to a severe test, while at the same time it is a proof of the confidence placed in the ability of the shipyard.

Meanwhile the construction of the great dock, built by the company itself, is making good progress.

The number of workmen is expected soon to exceed 3000, and more hands will be required. In consideration of this, a company has been established for the purpose of building healthy cottages for the workmen at the neighbouring village of Neuhof, so that the men employed at the "Vulcan" yard will have comfortable homesteads in close proximity to their place of work.



"THE FLYING FISH". A COMBINATION OF MOTOR BOAT AND AEROPLANE

About six months ago the idea was conceived in the shop of the Michigan Steel Boat Company, 1250-1500 Jefferson Ave., Detroit, Mich., of building a combined motor boat and aeroplane. In the beginning very little was thought of the idea and nobody ever dreamed of this craft becoming a commercial success, but so practical does the invention appear that A. A. Schantz, President of the D. & C. Aerial Navigation Company, has given a tentative order for six of them to be used in service between Detroit, Cleveland, and Buffalo.

"The Flying Fish" is the practical use of the flying machine. Some few weeks ago the first working model was taken out on the River above Belle Isle and skimmed over the ice scarcely touching it at a speed of sixty-five miles an hour. This was with a less powerful engine than that which the second "Flying Fish" is equipped and which was recently exhibited at the National Motor Boat Show in Madison Square Garden, New York City.

The hull of the "Flying Fish" is a water tight steel and aluminum tank 5′7″ wide, 7′2″ long and 2′ deep. The bow end is slanted but all other angles are 90 degrees.

In this is set an 8 cylinder aeroplane engine, the only 8 cylinder aeroplane engine in the world. It is a model of compactness but belying its size, it eats up gasoline at a great rate and whirls the propeller at terrific speed.

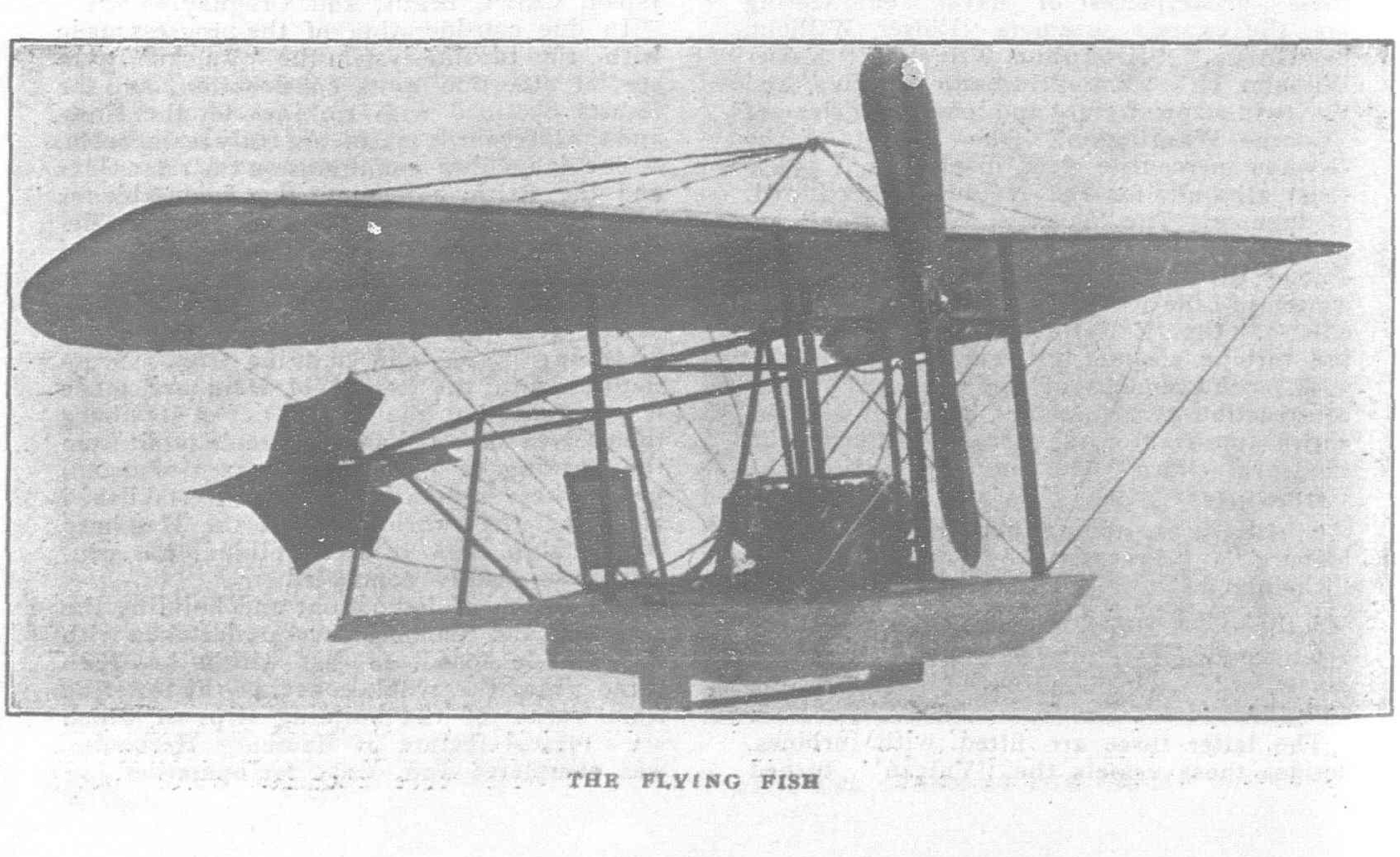
Above the hull is a single plane 26 feet from tip to tip and 6½ feet wide. The frame is covered with oil soaked canvas, khaki in color. It is convex.

Extending behind the hull for the world like the handles of a baby buggy, except that the arms are steel and the wooden cross piece is a foot wide, is the tail, and this flat board 5′7″ long, a foot wide and one-half inch thick, about 10 feet behind the hull, the craft is expected to fly, that is, when the boat attains sufficient speed forward, the plane is expected to lift the hull out of the water entirely, only the "tail feathers" touching the surface. As the speed increases it is believed that the "Flying Fish" will rise from the water entirely and leap over the top of the waves, the "tail feathers" touching at intervals and steadying the mad flight.

Also extending behind the hull is the rudder, a regular aeroplane rudder but smaller. It is fourvaned, the blade being covered with canvas.

At the foot of the hull is the propeller, a double blade of wood over 6 feet from tip to tip.

In the rear of the hull is the cock pit into which the feet of the skipper extend as he sits on the caned back chair. Immediately in front of him are the two levers, one controls the rudder, the other warps the single plane which combats the air currents.



THE FLYING FISH

STEEL WIRE CONCRETE REINFORCEMENT

The Broadening Uses of Woven Fabric in Various Forms of Granolithic Construction

Starting from the coincidental receipt of unusually heavy orders for fencing wire from two widely separated sections of the country, which upon investigation disclosed a new use of the material, there has grown in recent years the wide use of woven wire fabric in reinforcing concrete construction, says the *Iron Trade Review*. This branch of the wire business is now extending broadly in different directions and some very interesting applications are now being made with very satisfactory results.

THE BEGINNING OF AN INDUSTRY

The credit for the use of woven wire fabric as a reinforcement belongs to a number of widely separated contractors. As early as 1904 the American Steel & Wire Co., which is now producing the triangle mesh reinforcement, received its first intimation that its "Ellwood" fencing was not only being used for fence purposes, but was also being bought by contractors to reinforce concrete. Comparatively large sales made in western New York and southern California attracted attention and developed, upon investigation, a broader use of their product than the manufacturers themselves had at that time anticipated. For a number of years prior to this time, the fence had been upon the market as one of its standard products. The Ellwood fence machines were the inventions of the late Isaac L. Ellwood and the material was manufactured by him and his immediate successor, the American Steel & Wire Co., of Illinois, until its manufacture reached a large tonnage. Among the companies later amalgamated with the American Steel & Wire Co. was the Consolidated Steel & Wire Co., which controlled the sale of what is known as the "American" fence, a square-mesh fabric. When the possibilities of the Ellwood fence, or the diamond mesh fabric, for concrete purposes was grasped, means for improving the product for reinforcement were immediately sought.

IMPROVING THE DESIGN

It was found that the objections to the use of fence fabric for reinforcing concrete were two fold. In the first place, woven wire fencing designed for farm usage in the enclosing of live stock is ordinarily manufactured with close meshes at the bottom and the spaces are gradually increased towards the top. This was manifestly wrong for concrete construction, as to insure a perfect distribution of the strain the tension members must be uniformly spaced and must be of absolutely uniform strength, while in fencing the regular grade of market wire serves the purpose admirably.

After considerable experiment, F. H. Daniels, chief engineer of the American Steel & Wire Co., effected an improvement on the Ellwood fence machines, which would enable them to make a generally acceptable reinforcement fabric, and which was put on the market by the American Steel & Wire Co., in the spring of 1907 and is now recognized as a standard building material.

The triangle mesh steel woven wire reinforcement is made with both single and stranded longitudinal or tension members. Both kinds are illustrated in Figs. 1 and 2. That with the single wire longitudinal is made with one wire varying in size from a No. 12 gage up to and including a one-half inch diameter and that with the stranded longitudinal is composed of two or three wires varying from No. 12 gage up to and including No. 4 wires stranded or twisted together with a long lay. These longitudinals, either single or stranded, are invariably spaced 4 inch centers, the sizes being varied in order to obtain the desired cross sectional area of steel per foot of width. The transverse or diagonal cross wires are woven between the longitudinals so as to form triangles, thereby lending additional carrying strength to the longitudinal or tension members and positively spacing them to provide a more perfect distribution of the steel. These diagonal or transverse wires are woven either 2 or 4 inches apart. A hinge joint is provided on each longitudinal which enables this reinforcement to be folded longitudinally in any desired shape, making it adaptable to all kinds of concrete construction. Its design provides a perfect mechanical bond between the steel and the concrete and since it is not galvanized unless so ordered, the maximum adhesive bond is developed. A sufficient area of section is provided in the cross wires to prevent temperature cracks, thereby eliminating the necessity of laying additional reinforcement at right angles to the longitudinal or tension members.

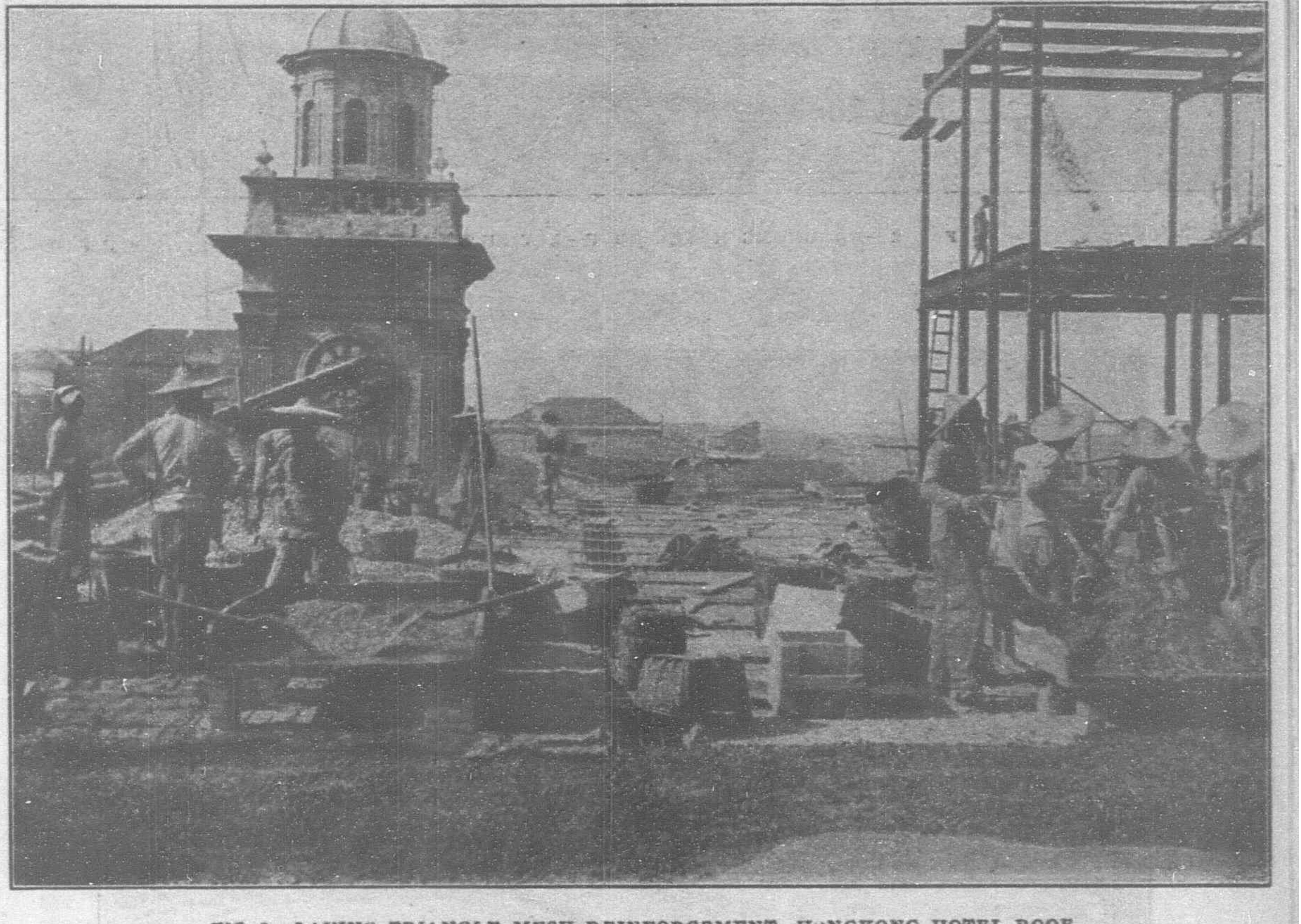


FIG I—LAYING TRIANGLE MESH REINFORCEMENT, HONGKONG HOTEL ROOF

THE FLYING FISH.—Continued

The weight of this craft is 750 pounds.

Both for sport and business purposes the new air boat is expected to be at once popular. With its great speed it will surpass any boat that is forced to depend entirely on the water for sustaining the hull.

There is less danger of it tipping than in any ordinary boat for the plane will act as a preventive. In our boat the passenger will have all the sensations of flying, the rush of speed through the air and there will be something more substantial than air beneath should anything go wrong. The air is a pretty thin cushion to land on. Even should the boat be entirely out of the water and the engine failed, there would be merely a drop of a few feet in a nonsinkable, perfectly balanced and safe hull.

"The Flying Fish" is not expected to fly at any length or height, except as a rush of air catches the plane and lifts her up 8 or 10 feet for a short distance. The tail piece will be always in the water sustaining her in steady flight. The tail piece will offer no resistance to the rudder. There will be nothing else to offer any resistance, except the insignificant front surface of the craft, so what is there to prevent great speed?

With the first machine we made 65 miles an hour over the ice. The tail piece skimmed the ice every fifteen feet or so. There was no jar as we touched the surface, the sailing was perfectly smooth.

We believe the "Flying Fish" can be launched in ordinarily smooth water and while in flight will not be bothered by heavy waves. Aeroplanes nowadays fly in heavy winds and we believe "The Flying Fish" and her successors can do at least as well.

The present model is small with only accommodations for one person, but with a little larger craft passengers can be accommodated.

A. A. Schantz, who has worked out a plan for a system of dispatch boats between Cleveland, Buffalo, and Detroit, is enthusiastic over the aerial motor boat. It was his original plan to have a fleet of six airships for emergency service between the three cities and possibly with the bigger boats of the D. & C. fleet, the airships to be capable of carrying one or more passengers, but the new style motor boat has all the qualifications of speed and adaptability and he believes a far greater element of stability. People who would fear to use the aeroplane in its present undeveloped state would trust themselves to the aerial motor boat he believes.

However, the aeroplane companies will be given every chance to make good in competition with the air-water craft.

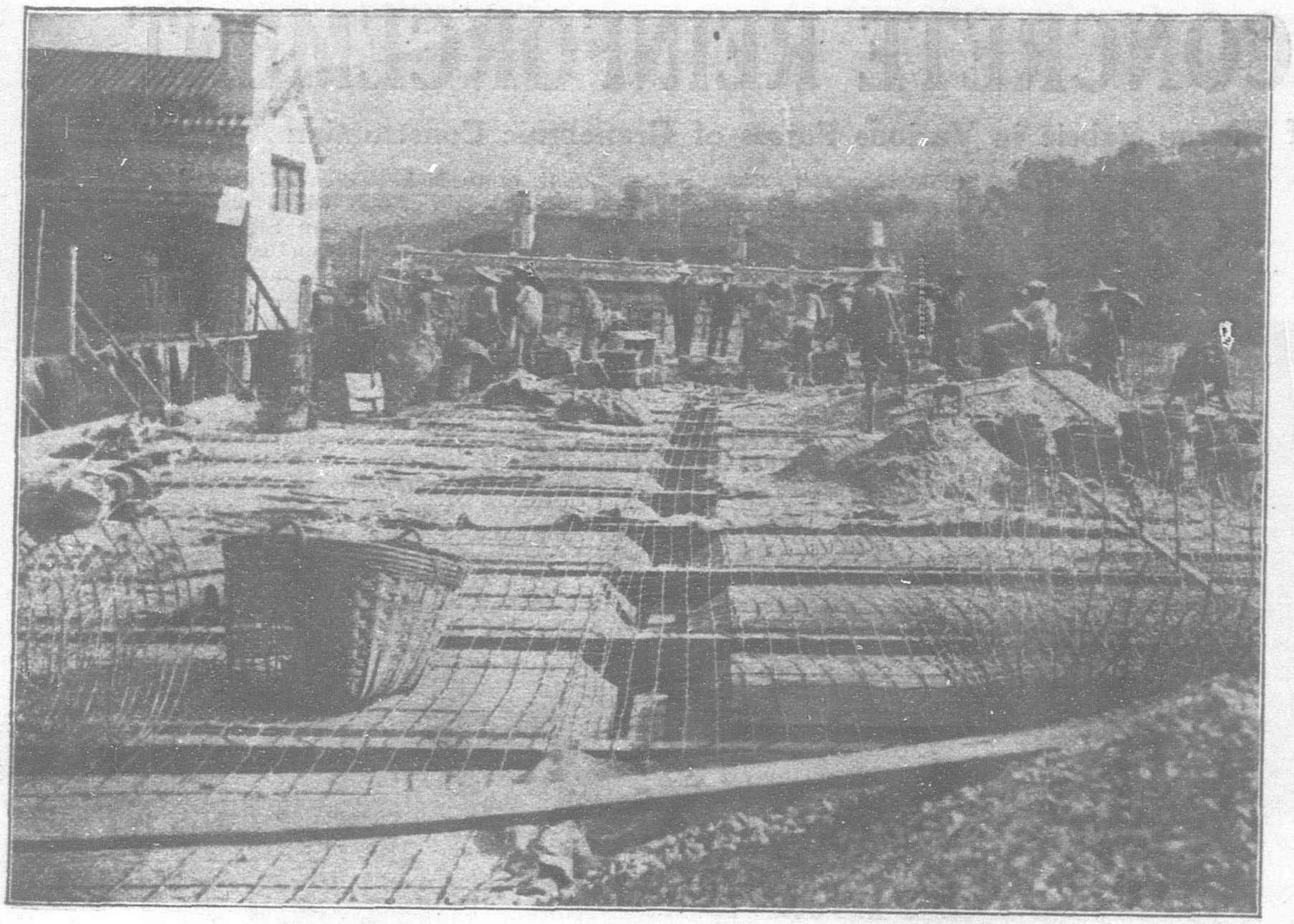


FIG. 2—HONGKONG HOTEL ROOF—LAYING TRIANGLE MESH

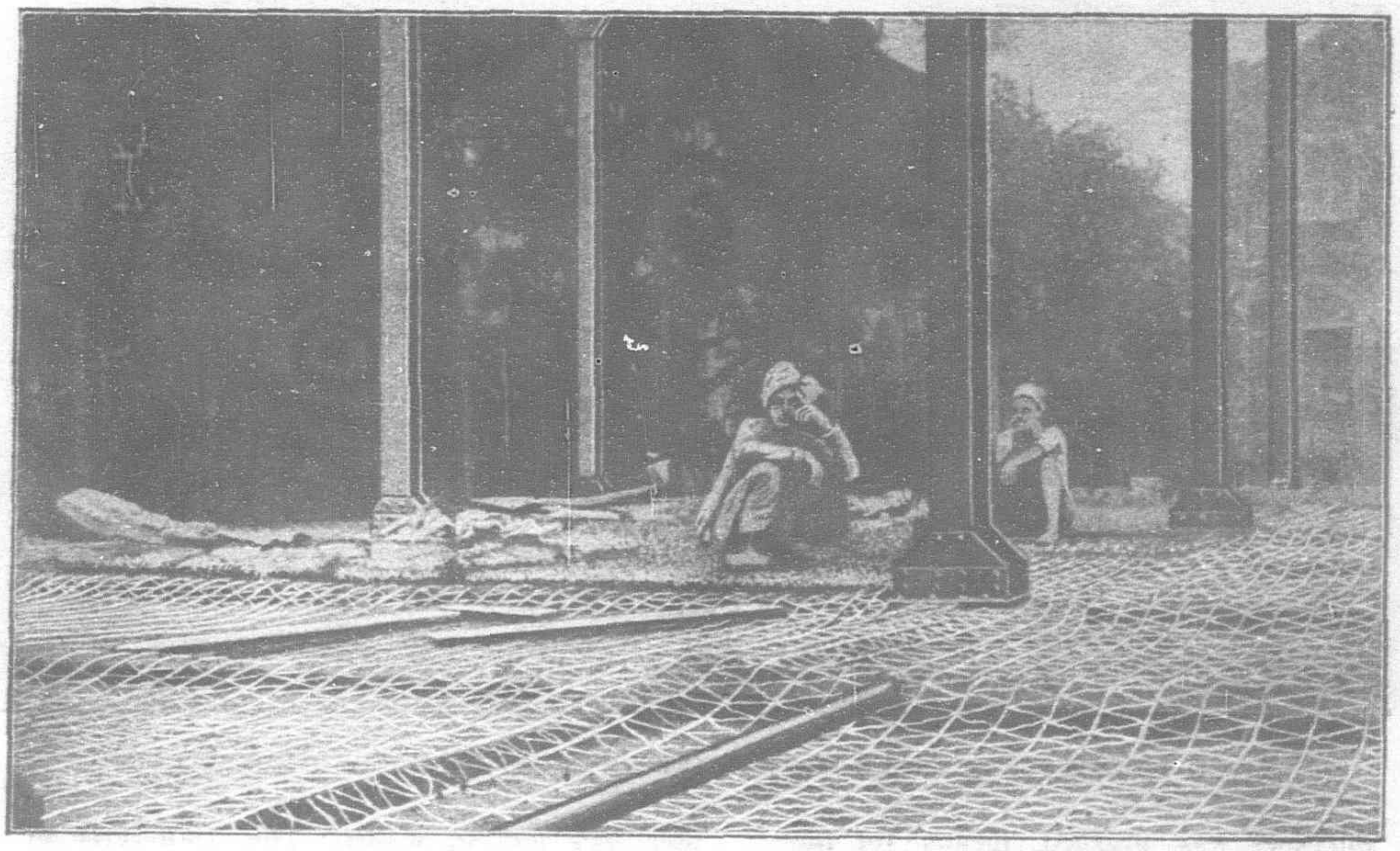


FIG. 3—VIEW OF PORTION OF FIRST FLOOR OF MESSRS. WATSON & SONS' PREMISES, RANGOON.—TRIANGLE MESH No. 33 WITH CONCRETE PARTLY FILLED IN.—SPANS 7 FOOT—CONCRETE 5".

DIVERSITY OF APPLICATIONS

While its original use was presumed to be limited to reinforcing concrete floors, it has been found to be also well adapted to other uses. One of the principal applications is that of reinforced concrete pipe. Under the Meriwether system of manufacture, this pipe is built above ground and later lowered in the trench. The molds used, as seen in Figs. 3 and 4, consist of cast iron bottom rings and inner and outer truly cylindrical and concentric casings of sheet steel. The reinforcing metal is centered in the mold rather closer to the interior circumference of the section, thus insuring the proper location in the tension of the crown and invert. Each section is made with a bell and a spigot end. The reinforcing fabric extends the length of the section and projects both into the bell end and out of the spigot end for several inches. The spigot is shorter than the bell so that when two sections of the pipe are placed together the reinforcing metal from one section overlaps the reinforcement of the other section in an internal recess. The recess in this joint is filled with cement mortar, thus locking the sections together and sealing the joint at one operation. On all pipe of 36 inches in diameter or larger, the joints are made from the interior after the back filling has been placed by forcing the grout behind a shield.

On sizes less than 36 inches in diameter, the joints are made from the outside through openings in the crown portion of the bells before the black filling is placed. Pipe under the Meriwether system is manufactured in sizes ranging from 24 to 96 inches diameter and in 3 and 4-foot lengths. Under test it has revealed surprising strength, showing a test recently made at Wichita, Kas., on a 42-inch section in which a load of 37,700 pounds was applied. A most interesting recent service to which reinforced concrete pipe has been put is sub-aqueous work. The pipe has been used with much success in the building of sewer outlets, water works intakes, etc. For this purpose the short sections are usually jointed above ground into lengths of 20 feet with cast iron flanges molded into each end. These lengths are then lowered into place and the flanges bolted together by divers. The Lock Joint Pipe Co., 165 Broadway, New York City, is now furnishing 40 miles of this pipe for the sanitary and storm system of sewerage in Havana, Cuba. This pipe ranges in diameter from 36 to 84 inches and is said to be the largest contract for reinforced pipe ever awarded. The contract will require the use of 1860 tons of steel wire reinforcement.

The use of wire fabric as reinforcement in road construction is another field of usefulness which has been opened to this material. The Vanderbilt automobile cup course on Long Island contains over 1,500,000 square feet of this mesh on the reinforced concrete roadway. A layer of 1 inch of crushed stone was placed upon the roadbed and upon this was laid the wire reinforcement, which in turn was covered by 4 inches of crushed stone. The roadway was then rolled with a 60-ton steam roller, and stone and cement grout in liquid form was distributed over the entire area until the mixture remained liquid on the surface, the result being a reinforced concrete slab without a break, 28 feet wide and 6 miles long. The reinforcement is essential because of the possibility of the grade settling over small areas, which would, without this steel fabric cause a depression in the roadway. The material which was furnished for this purpose is the triangle mesh reinforcement, style No. 8, galvanized.

Another use that has been found for this fabricated material is in the reinforcement of concrete piles. By reason of the hinge joint formation of this type of fabric, it is believed that this application is destined to be considerably extended. A very large percentage of the fireproof buildings in Greater New York during the past year has used the steel wire mesh reinforcing material in the construction of floors and roofs. Over 1,000,000 square feet alone have been placed in the new Grand Central terminal improvements of the New York Central railroad. Among other important new buildings in the metropolis in which this fabric has been used are Kent Hall, Columbia University, Stern Brothers department store, Bronx theater, Sinclair building, and numerous other loft, office and apartment structures.

Triangle Mesh Steel Woven Wire Reinforcement is made with both single and stranded longitudinal, or tension members. That with the single wire longitudinal is made with one wire varying in size from a No. 12 gauge up to and including a ½-inch diameter, and that with the stranded longitudinal is composed of two or three wires varying from No. 12 gauge up to and including No. 4 wires stranded or twisted together with a long lay. These longitudinals, either solid or stranded, are invariably spaced 4-inch enters, the sizes being varied in order to obtain the desired cross sectional area of steel per foot of width.

The transverse or diagonal cross wires are so woven between the longitudinals that perfect triangles are formed by their arrangement, thereby not only lending additional carrying strength to the longitudinal or tension members, but positively spacing them and providing a most perfect distribution of

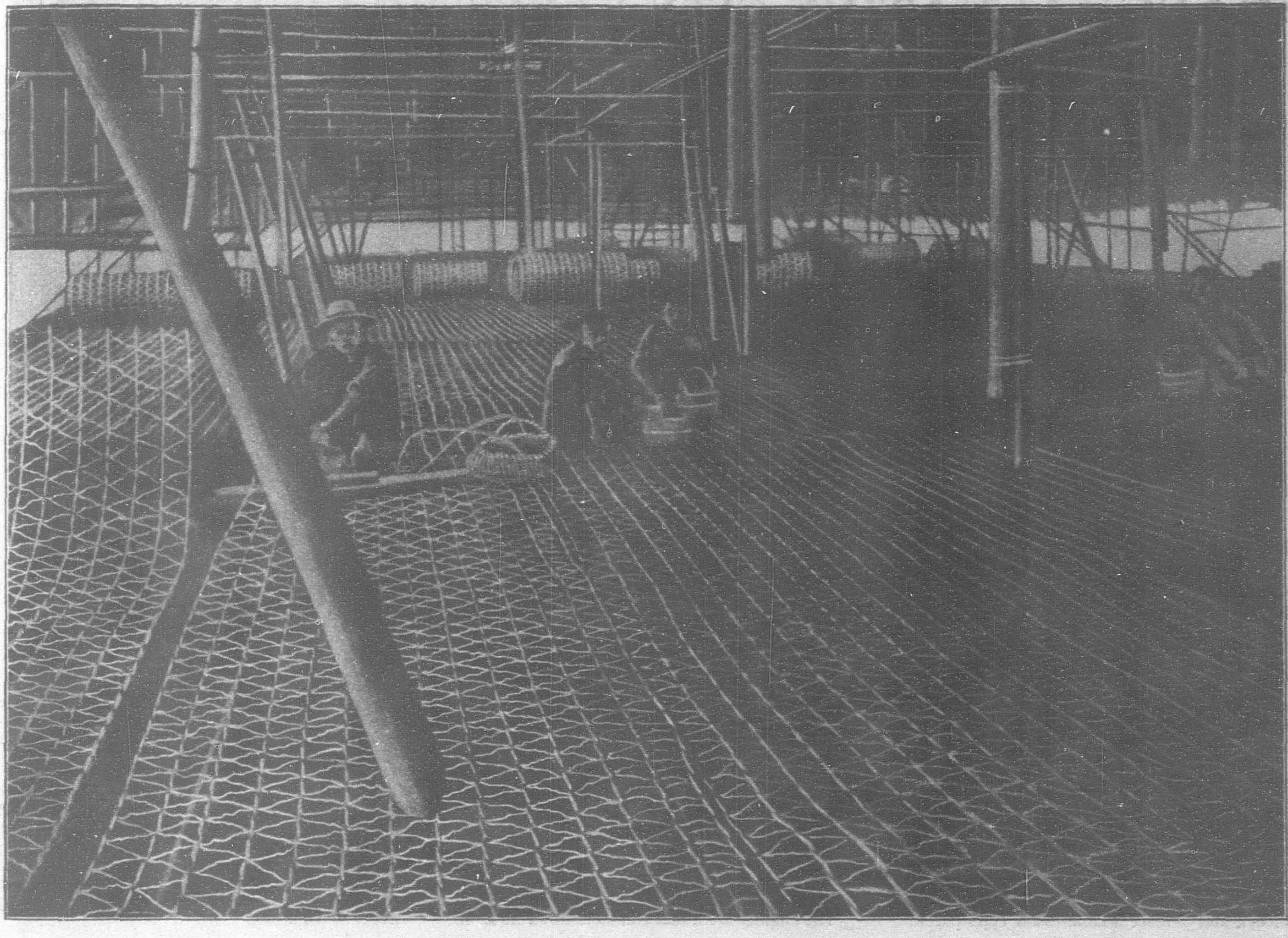


FIG 4—NEW OUT DOOR CUSTOMS BUILDING, HONAM, CANTON.—TRIANGLE MESH NO. 9.—MESSRS. PURNELL AND PAGET, ARCHITECTS

the steel. These diagonal cross or transverse wires are woven either 2 or 4 inches apart, as is desired. It is the most perfect reinforcement for concentrated loads, distributing the stress imposed by the load throughout the floor slab. A hinge joint is provided on each longitudinal, which enables this reinforcement to be folded longitudinally in any desired shape, making it adaptable to all kinds of concrete construction. Its design provides a most perfect mechanical bond between the steel and the concrete, and from the fact that it is not galvanized (unless specifically ordered) the maximum adhesive bond is developed.

A sufficient area of steel is provided in the cross wires of Triangle Mesh Reinforcement to prevent temperature cracks, thereby eliminating the necessity of laying additional reinforcement at right angles to the longitudinal or tension members.

By the use of Tables 1 to 12, inclusive, giving the resisting moments of reinforced concrete slabs, suitable fabric may be selected to use either with or without bars for all kinds of loads and spans and conditions met with in the construction of buildings, bridges and reinforced concrete in general. In these tables we have assumed different allowable stresses in the steel, namely, 16,000, 18,000, and 20,000 pounds per square inch, depending on its elastic limit, and different proportions of cement, sand and stone in the concrete. We, however, recommend in general using a 1:2:4 mixture for floors or other structures subjected to high stresses.

While we recommend the use of a fabric made with a mild steel we can furnish it in any grade of steel desired.

Triangle Mesh Woven Wire Reinforcement for Concrete is made with either solid or stranded longitudinal members, properly spaced by means of diagonal or cross wires so arranged as to form a series of triangles between the longitudinal or tension members; the longitudinal members being invariably spaced 4 inches apart, the cross wires either 2 inches or 4 inches apart, as desired, providing either a 2-inch or 4-inch mesh. The sizes of both longitudinals and cross wires are varied in order to provide the cross sectional areas of steel required to meet the conditions.

Triangle Mesh Reinforcement, we believe, is the most efficient material on the market for the purpose:

It provides a more even distribution of the steel, reinforcing in every direction.

Tension or carrying members accurately spaced.

A most perfect mechanical bond.

When a specific size of fabric or area of steel is specified it is impossible to leave out any portion of the reinforcement.

Minimum cost of installation.

Easily handled and stored on the work.

Low cost of inspection.

An absolutely continuous action from one end of the structure to the other.

Higher elastic limits with the same quality of steel, due to cold drawing.

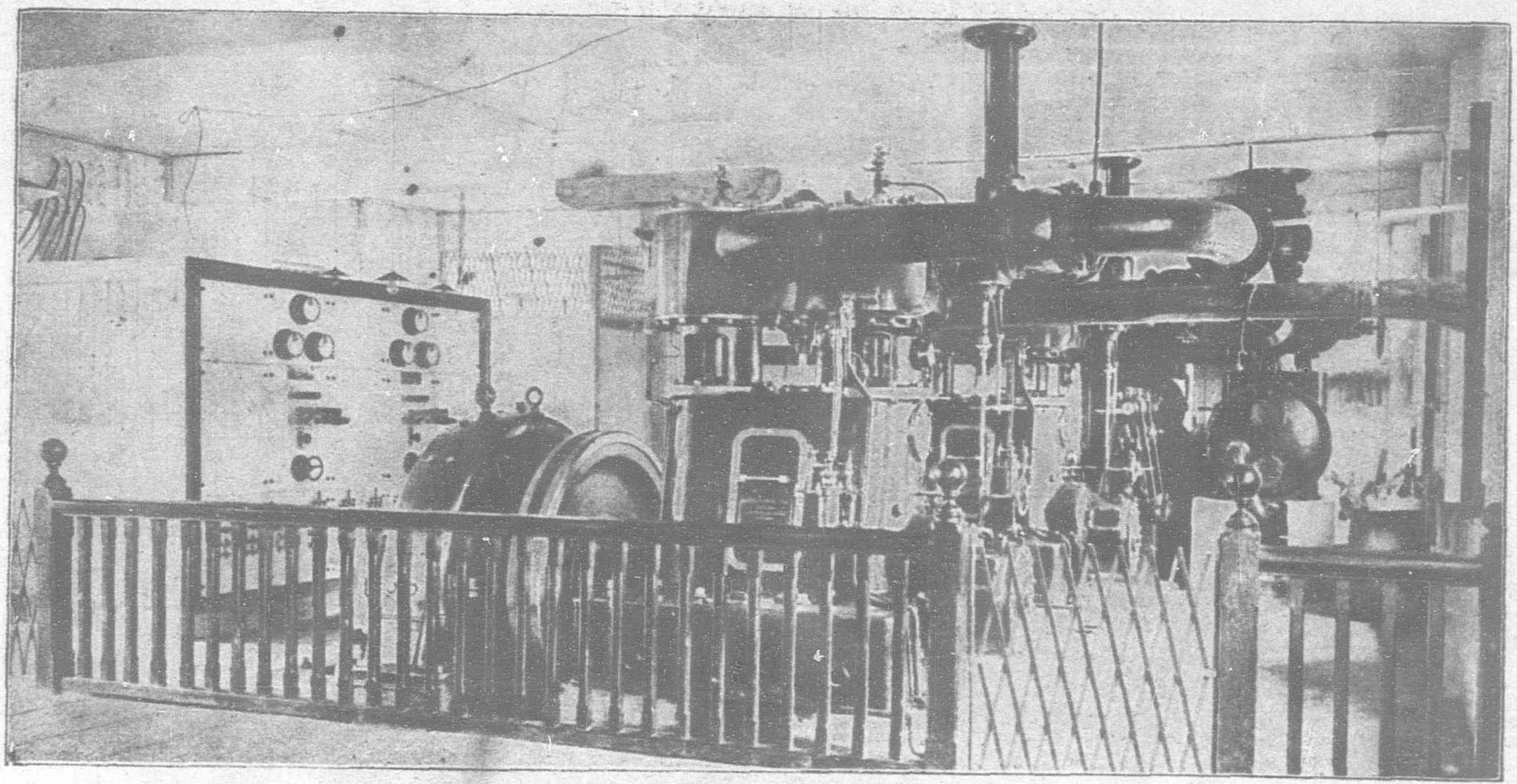
Distributes the stresses due to a concentrated load over a greater area.

Triangle Mesh Reinforcement is the only design of woven wire fabric in which the cross or diagonal wires assist the longitudinal or tension members in carrying the load.

While reinforcing fabrics are made both galvanized and not galvanized, we strongly recommend the latter, due to the fact that a much better adhesive bond is provided and also greater strengths. In the case of a galvanized wire the adhesion between the reinforcement and the concrete is to the coating on the steel and not to the steel itself, and also in the galvanizing process the steel is annealed or softened, thereby reducing its elastic limit and ultimate strength.

It is a well known fact that steel thoroughly imbedded in a proper mixture of concrete does not rust, and in the case of a smooth round rod used as reinforcement it is more desirable to have a thin surface coat of rust, than if it were perfectly bright and smooth, provided the rust has not penetrated sufficiently far to pit the steel and produce a scale. This slight coating of rust provides a rougher surface and therefore a better bond.

SHANGHAI NATIVE CITY ELECTRIC LIGHT PLANT



GENERAL VIEW GENERATING ROOM AND SWITCHBOARD

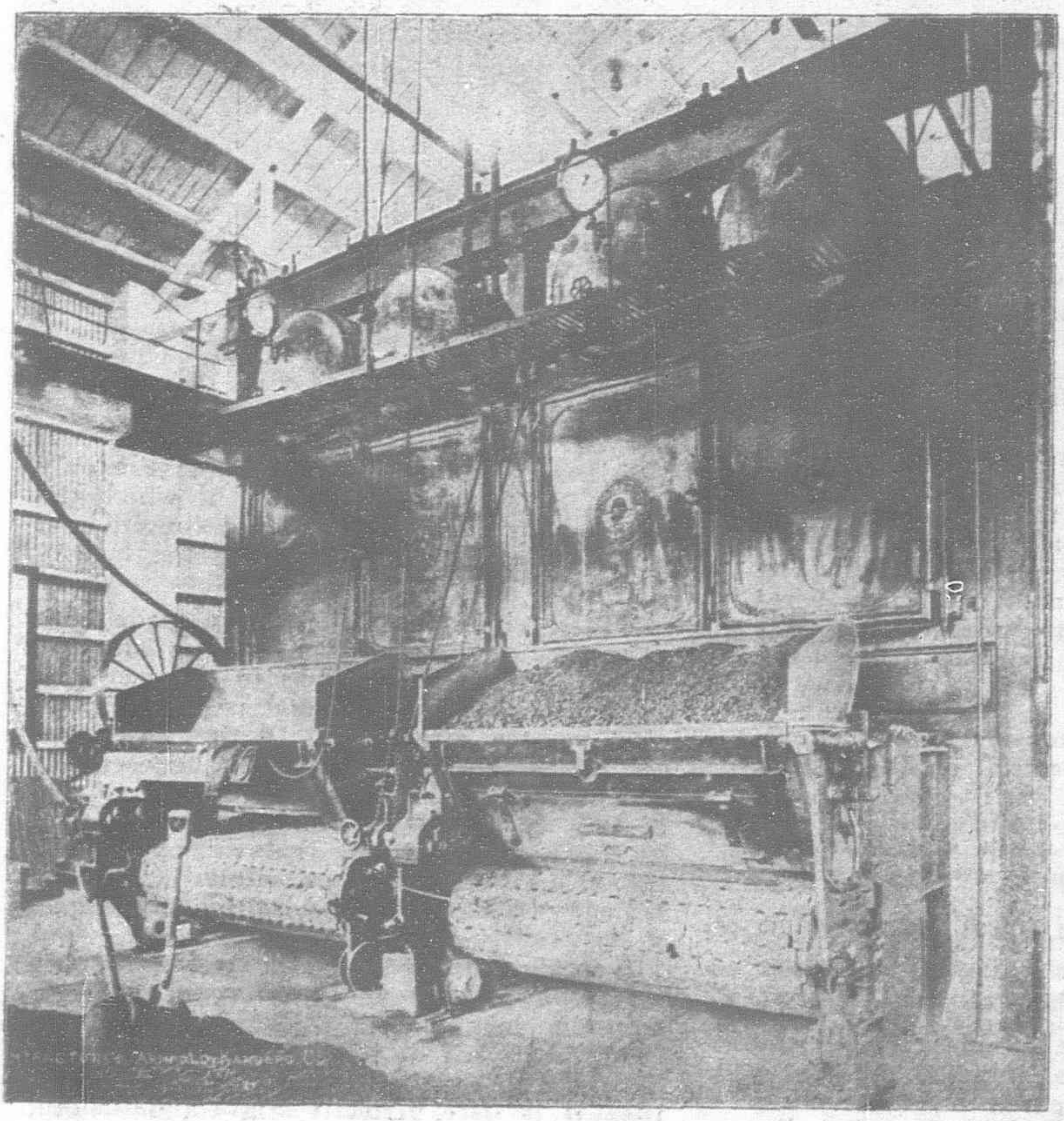
The second electric plant for lighting the Native City of Shanghai was recently erected and placed in operation. One was already at work inside the walled town, but the new plant is located in the Compound of the Native City Waterworks near the Chinese Bund and the Kiangnan Arsenal. The contract was carried out by the Electrical Department of the well known firm of Arnhold Karberg & Co., under the direction of their Chief Electrical Engineer, Mr. L. Junginger.

The equipment of the plant consists of 2 Babcock and Wilcox double drum type patent water tube boilers of 3140 sq. heat of heating surface each, capable of evaporating 20,000 lbs. of water per hour working at a pressure of 160 lbs. per sq. inch. Babcock & Wilcox mechanical chain grate stokers, of 59 sq. ft. grate area each, are used, and arranged for electric motor drive.

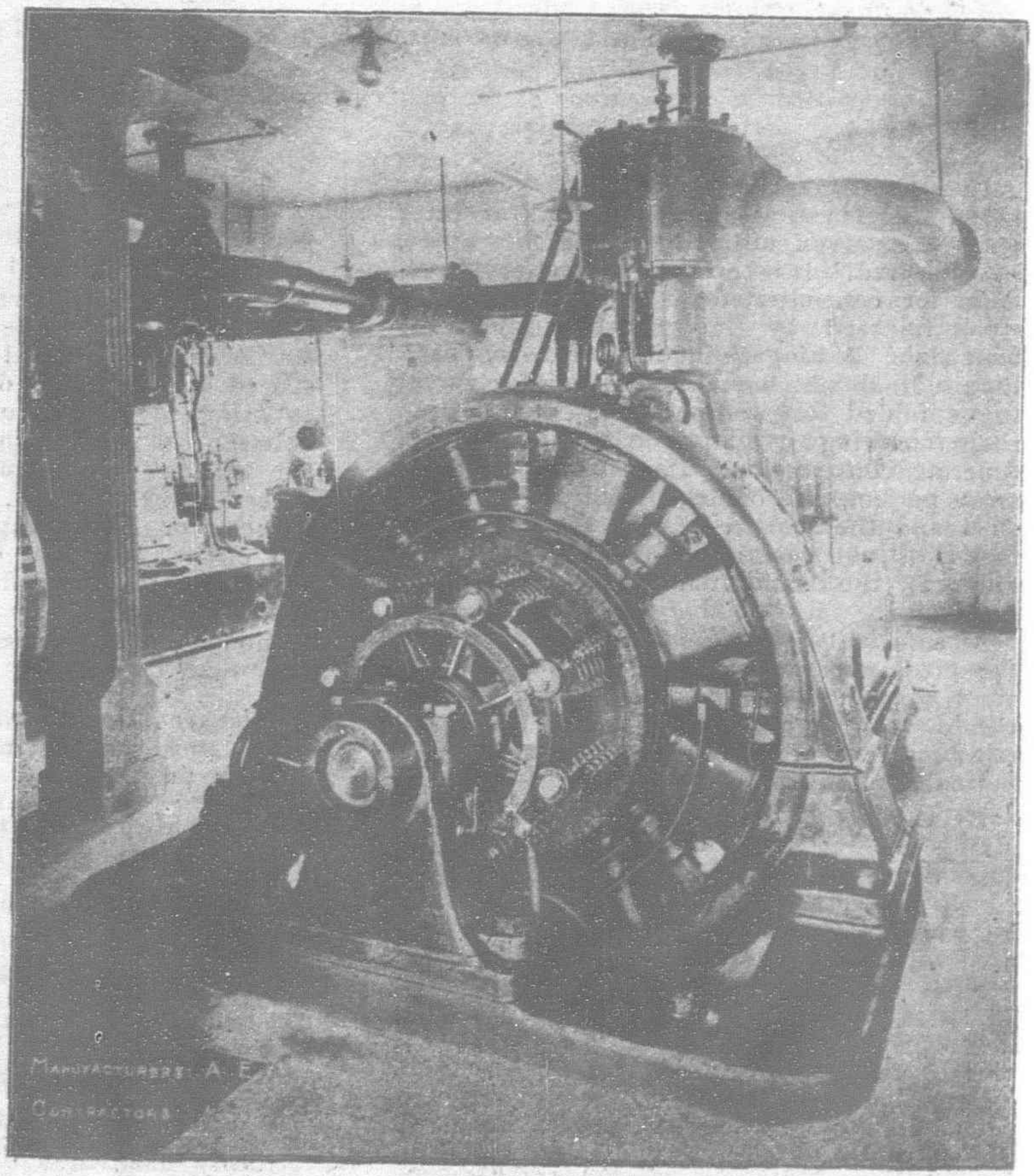
The motive power is furnished by 2 Bellis & Morcom patent 2 Crank, Compound, high speed, self lubricating engines; each of 380 B. H. P. at 375 r. p. m. working at a pressure of 160 lbs. per square inch, and running under condensing conditions.

The engines are direct connected to 2 A. E. G. direct current 250 Kilowatt dynamos, generating at 440-500 volts. They are eight pole machines fitted with interpoles. Static balances are used and the armatures fitted with slip ring contacts.

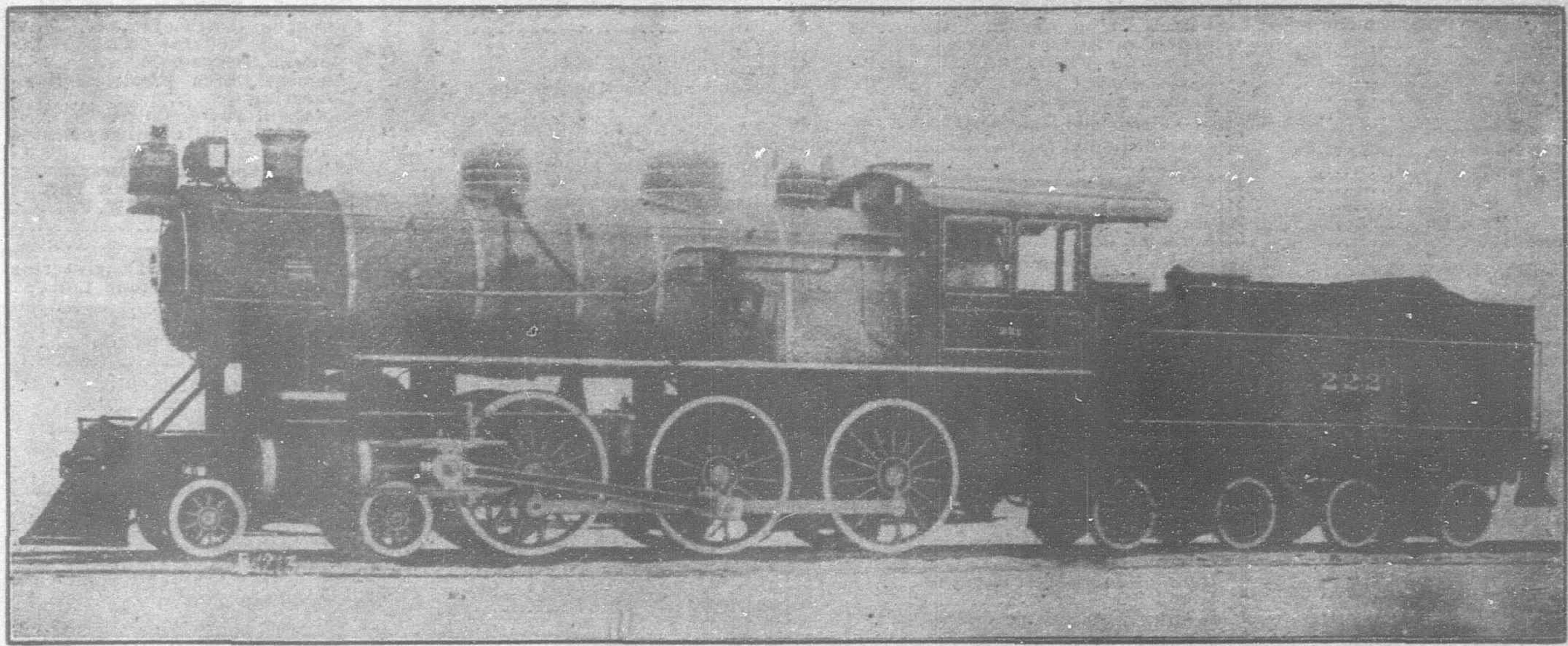
The switchboard is a 5 panel A. E. G. Standard, provided with the usual instruments and devices. The three wire system is used on the street mains, using 440 volts on the outer and 220 volts on the neutral wire, having static balances with a 15 per cent capacity for under or over load. A. E. G. Metalamps are used exclusively in the city and are giving every satisfaction.



BOILER PLANT: BABCOCK AND WILCOX

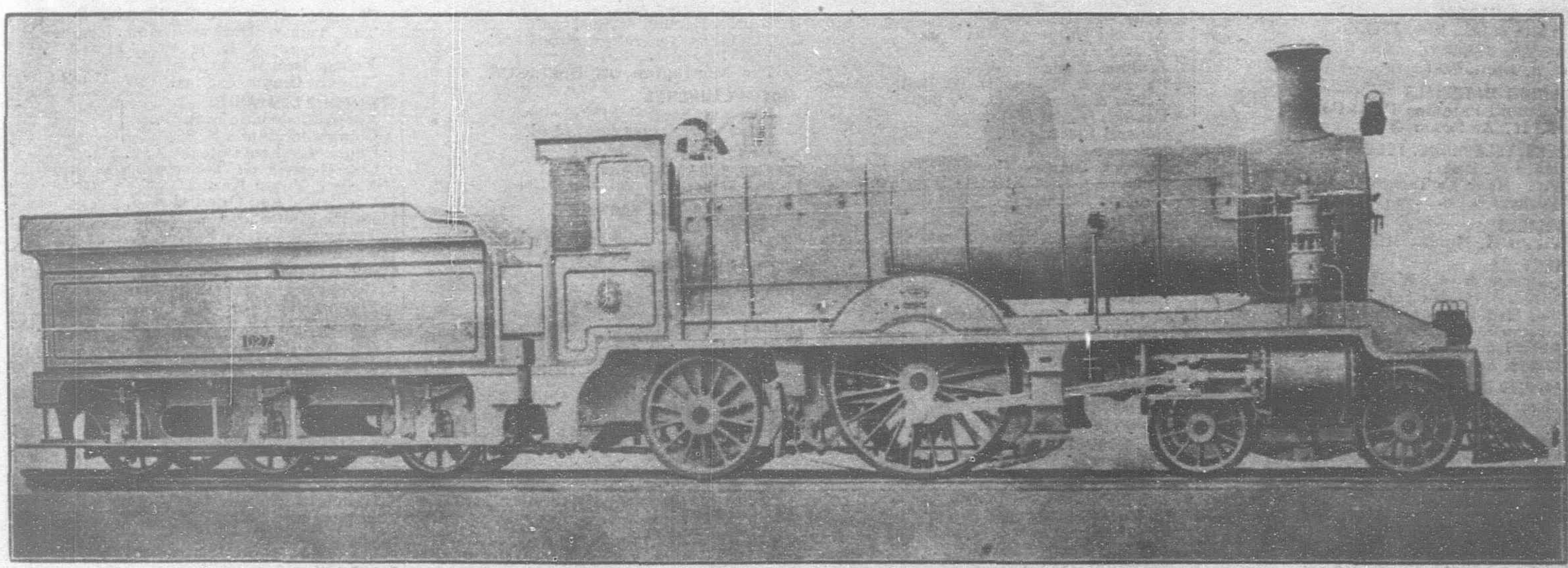


A. E. G. GENERATORS



8-WHEELED TENDER LOCOMOTIVE BUILT FOR THE IMPERIAL GOVERNMENT RAILWAYS OF JAPAN (KOREAN LINES) BY THE AMERICAN LOCOMOTIVE COMPANY OF NEW YORK.

The accompanying illustration is of a locomotive built by the American Locomotive Co. of New York for the Japanese Railway Board for the Korean lines. It was constructed for standard gauge track 4″ 8.5″ and its dimensions and description follow: Cylinders, 20″ dia., 26″ stroke; driving wheel-dia. 66″; boiler, dia. 64″, pressure 180 lbs.; fire box, length 96.125″, width, 60.25″; tubes, number, 310, dia., 2″, length 15′ 2″; wheel base-driving, 13′ 6″, engine 24′ 4″, engine and tender, 49′ 8.5″; weight in working order, leading 31900 lbs., driving, 117200 lbs.; engine, 14900 lbs., tender, 86400 lbs.; fuel, soft coal; heating surface, tubes 24480 sq. ft., fire box, 132 sq. ft.; total 2580 sq., ft.; grate area, 40 sq. ft.; maximum tractive power, 24,100 lbs; factor of adhesion, 4.86; tender, type 8-wheeled; capacity—water 4,000 gals., fuel 7 tons.



LOCOMOTIVES BUILT FOR THE SHANGHAI-NANKING RAILWAY BY KERR, STUART & CO.

The illustration above is of one of four passenger locomotives built for the Shanghai-Nanking Railway by Messrs. Kerr, Stuart & Co., Limited, of London and Stoke-on-Trent. The Consulting Engineers were Messrs. Sir John Wolfe-Barry and A. J. Barry.

As will be seen from the illustration, the engines are of the four two type with six-wheeled tenders. The leading dimensions are given below:—Gauge 4′8½″; Driving Wheels 7′0″ dia., Bogie Wheels 3′6″ dia., Trailing Wheels 4′9″ dia., Total Wheel Base 48′9″, Length over couplers—engine & tender—57′3¾″. Tender capacity—fuel 7 tons, water 3500 gallons; Weight empty—Engine, 50 tons 6 cwts, Tender 19 tons 9 cwts, Weight in working order, Engine 56 tons 1 cwt, Tender 42 tons 13 cwts. Total 98 tons 13 cwts.

The cylinders are 18″ in diameter with a stroke of 26″, and are fitted with bronze "D" slide valves driven by Stephenson link motion.

The boiler is designed for a working pressure of 180 lbs. per square inch, and has an outside diameter at the front of 4′9½″, the telescopic barrel being 12′10½″ in length. The internal fire box is of copper and is fitted with copper stays. Brass tubes to the number of 188 are used in the boiler, these giving a heating surface of 1567.39 square feet. With 182.61 square feet in the fire box, this gives a total heating surface of 1650 square feet.

These engines were wanted urgently, and the order was placed with Messrs. Kerr, Stuart & Co., Ld., on April 12th-1909. Notwithstanding the Whitsuntide Holidays and the period of mourning for the late King, the first two engines were steamed on the 8th and 11th June, a record, we believe, in British Locomotive engineering.

These engines have been in operation for some time on the express service between Shanghai & Nanking, and we understand from experiments conducted by the Locomotive Superintendent, Mr. E. J. Dunsaan, M. I. M. E., that this type of engine shows considerable economy in coal consumption.

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Siemens China Electrical Engineering Co.	39
Southern Pacific Co.	30
South Manchuria Railway Mining Dept.	8
South Manchuria Railway	14
Standard Oil Co. of New York	35
Stevenson & Co., Ltd., W. F.	7
Strong, Frank L.	71
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Taikoo Dockyard and Engineering Company of Hongkong, Ltd.	9
Thompson, F. H.	65
Toyo Kisen Kaisha	37
Trussed Concrete Steel Co.	41
Tsingtauer Werft	75
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Vulcan Iron Works	66
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